THE HEADQUARTERS SIGNAL CENTER

The Expansion Period

1951 - 1966

Office of Communications

Chapter III

The Expansion Period

1 July 1951 - 31 December 1966

Section F

THE HEADQUARTERS SIGNAL CENTER

THE HEADQUARTERS SIGNAL CENTER, 1951 - 1966

Office of Communications

Signal Center

[redacted]

25X1

HSP No. _____

Foreword

The unceasing activity, highly efficient operation, and Agency-integrated stature of today's Signal Center belie its Topsy-like growth. So little documented source material being available, much of the following information had to be obtained from those longtime members of the component who shared its growing pains.

Its presentation will stem from their first-hand knowledge and experience in the work throughout its transitional development. Accuracy has been carefully preserved, notwithstanding an occasional subjective quality in so personal a history.

In this comprehensive account of Signal Center's everchanging activity, certain areas have been brought into sharper focus; however, the overall viewpoint of the necessarily general record scarcely does justice to the tremendous scope of its functional responsibilities or achievement during the 15 years, 1951-66, which it covers.

Virtually isolated by the very nature of

its highly sensitive and multi-faceted operation, the Signal Center has evolved as a close-knit "family" group — a natural outcome of the emphasis on inviolable security.

Detailed descriptions of cryptographic systems and machines have not been included in this section. The reader, on a need-to-know basis, is referred to the Communications Security Staff for any details.

None of the many fine tributes paid to CIA over the years has shown any understanding of the silently efficient part played by the Signal Center in their earning - this itself is a mute yet powerful tribute to this dedicated organization.

Contents

Appendixes

THE HEADQUARTERS SIGNAL CENTER

I. Background (1945-1951)

The Headquarters Signal Center started with a small residual nucleus of experienced personnel from the Office of Strategic Services (OSS) which was terminated in September 1945. Seemingly insignificant by today's standards, the OSS Message Center played a very important role in establishing the basic elements and modus operandi necessary to the efficient operations of a communications center designed to encipher, decipher, transmit, receive, and distribute volumes of classified messages. Though geared to a less demanding period long since outdated, these elements nevertheless provided a basic concept upon which future communications centers could be built. This small remnant then, actually laid the foundation for future Signal Center (S/C) operations.

The interim years were significant in that continuity of communications service was provided

during the Strategic Services Unit (SSU) and Central Intelligence Group (CIG) transitional periods.

Signal Center operations steadily increased in scope from the time of the advent of Central Intelligence Agency (CIA) in September 1947 through the next few years. The high degree of professionalism and expertise which was developed in encryption, transmission, and processing techniques during the early years enabled the S/C to support the tremendous staff communications requirements levied upon it after the outbreak of hostilities in Korea in 1950.

The communications activity of CIA which had operated for several years as a Division under the Assistant Director for Special Operations (ADSO) was upgraded as a result of the reorganization of 1951. Effective 1 July 1951 the Communications Division of CIA was separated from the Office of Special Operations (OSO) and was established as the Office of Communications (OC). 1/*

---

* See Attachment A

> The mission of the Office of Communications is to provide staff support to the Director of Central Intelligence by advising him on communications and electronic matters, to provide command and administrative communications support by the establishment and operation of signal centers and electronic communications facilities utilized in the transmission of classified communications traffic, and to support the clandestine services by providing training, equipment and related material to effect reliable and secure agent communications.
>
> To accomplish this mission, the office maintains and operates a worldwide network of communications stations and field operational headquarters. 2/

As a result of the reorganization, the Signal Center assumed a new and vital role in the Office of Communications. The major significance of this increased stature to the S/C was that it would become responsible for providing complete service to all components of the Agency and would no longer be looked upon as the private "Western Union" for the OSO.

The situation confronting the Signal Center in July 1951 was viewed with considerable alarm by many of its senior officers, and not without justification. This was due to the fact that operations had been consistently maintained at peak level since the outbreak of the Korean War, and

because the best available predictions all pointed to indefinite continuation of sustained maximum production. Too, notwithstanding increased manpower and improved technology, there was logical possibility that future operational demands imposed on the S/C might well exceed its capabilities. Accordingly, in anticipation of present and future demands for expanded S/C services, new plans were formulated in great detail to bring about increased personnel strength and grade structure, additional floor space, and a wide variety of new equipment and techniques.

II. Organization, Mission and Functions

A. 1951-59

The fundamental mission of the S/C was the rapid processing of electrical communications. It was responsible for the administrative and technical cable processing functions. The expanding Central Intelligence Agency brought many new responsibilities, and the cable volume increased rapidly. The S/C functioned as a combined Communications Center/Message Center until August 1952 when the

Cable Secretariat (C/S) was established. 3/* Responsibility for typing, editing, reproducing, and assigning distribution to incoming and outgoing staff cables was transferred from the Office of Communications to the Cable Secretariat. Thus relieved of this administrative burden, the Signal Center was able to concentrate its efforts on enciphering, deciphering, transmitting, receiving, and related communications functions. The S/C continued to be responsible for reproducing and distributing Special Intelligence (SI) and "Eyes Only" cables.

A complete list of the Chiefs and their Deputies controlling the Signal Center during the fifteen year period covered by this study will be found in Appendix A. Between 1951 and 1955, its most crucial, shape-taking stage, [redacted] 25X1

25X1 [redacted] was its guiding light. Drawing on his long experience and expertise, [redacted] planned the 25X1 interdepartmental organization, laying the foundation upon which the Signal Center was built. His

* See Attachment B

own self-evident zeal and unflagging service served as an exemplar to all who worked under him.

It was in this same 5-year period that the Signal Center developed the nucleus of its present day efficiency, by maximal utilization of personnel capability and exploitation of constantly updated equipment and production techniques. This may be seen graphically in the organization chart.*

Some indication of the Signal Center's increased scope and productivity by 1955, as reflected in its organization, mission and functions follows. 4/**

1. Office of the Chief, Signal Center

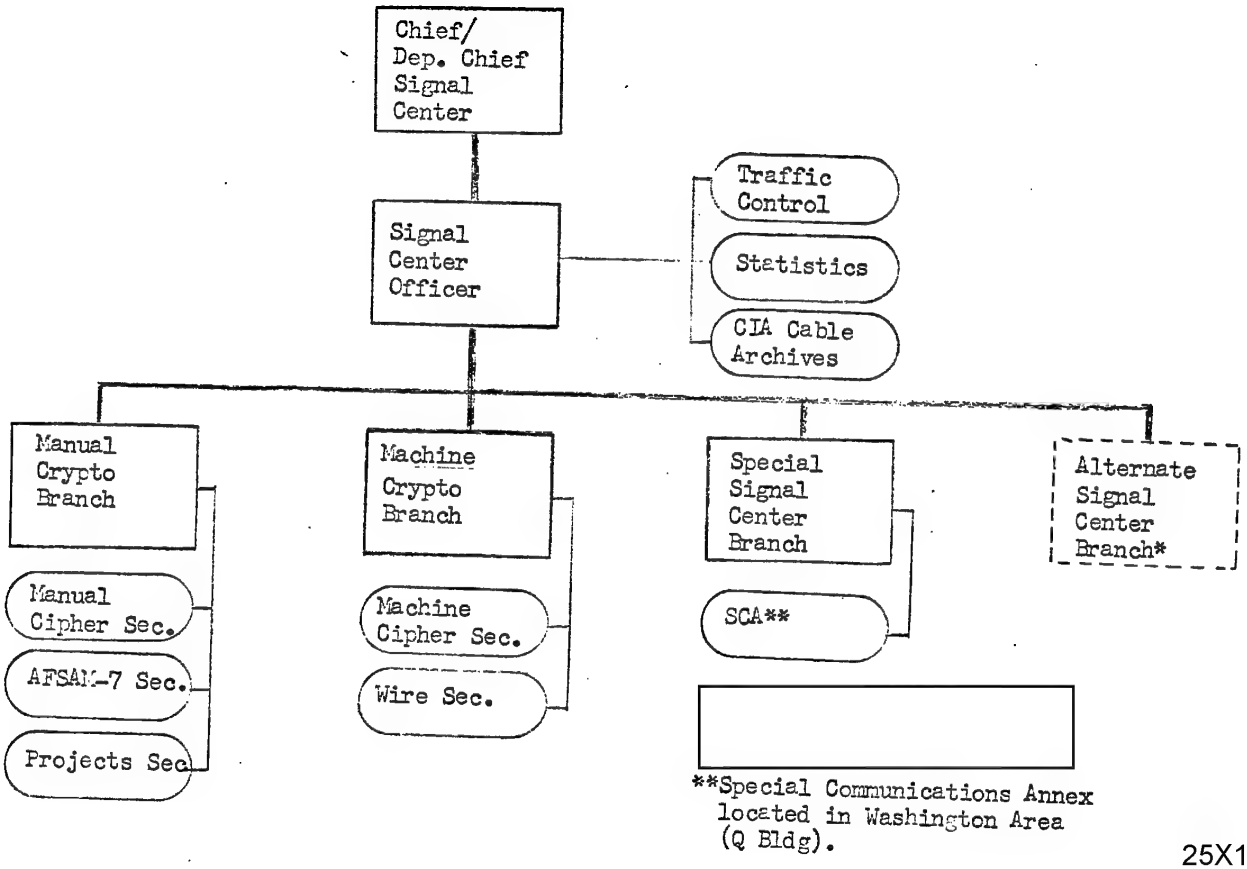
The Chief, Signal Center, was directly responsible to the Director of Communications (DCO) for its round-the-clock, 7-day week operation. His direction of the S/C involved many and various functions and obligations concerned with two broad categories: administration and operations.

---

* See Figure 1, p. 7

** See Attachment C

SIGNAL CENTER — 1956



25X1

Figure 1.
Organization Chart
of S/C 1956

SECRET

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

Among the Signal Center administrative problems, he was charged with full responsibility to implement for S/C use administrative directives emanating from the DCO; to interview and employ personnel, subject to acceptance and clearance by CIA, for the Washington and field Signal Centers; to review fitness reports and recommend transfers, dismissals, and promotions; to certify pay cards; to justify overtime requirements as submitted by the Signal Center Officers; to ensure on-the-job training of personnel prior to their departure for overseas S/C installations; to keep the domestic and overseas Signal Centers supplied with the necessary personnel; and to adjudicate problems of personnel in the Washington S/C, as well as field Signal Centers, whenever possible.

His top-level operational responsibilities were to implement operational directives pertaining to S/C operations from the DCO and other offices of CIA; to assume responsibility for cryptographic and registered materials; to assist in the drafting and coordinating of procedure guides dealing with cable writing and cable

procedures for CIA; to conduct continuous lecture courses in collaboration with Deputy Director for Plans (DD/P) on cable writing procedures; to provide teletype conference (Telecon) facilities to those interested offices of CIA; to establish criteria for the on-the-job training of new personnel destined for duty in Washington and the field; to ensure that adequate security precautions were maintained at all times; to make certain the Alternate Signal Center Branch (ASCB) could promptly provide communications for Headquarters on a world-wide basis in the event normal Washington communications were disrupted through enemy action or major civil or natural disturbances; to ensure the overall efficient operation of the S/C and ASCB; and to coordinate with proper staffs and divisions the curriculum of the cryptography school [redacted] 25X1

25X1 [redacted]

The Chief, Signal Center, was a member of the CIA Emergency Relocation Staff. Once a month he joined the entourage to the relocation site known as "the Rock." 5/

In addition to his administrative and operational duties, the Chief was also responsible for envisioning the future expansion of the Signal Centers, in light of then known and foreseeable needs for space and equipment. During the Expansion Period, plans were already being prepared for the eventual move to the new Headquarters in Langley, Virginia.

2. Signal Center Officers

Under the direction of the Chief, Commo Specialists designated as Signal Center Officers (SCO) maintained a continuous watch in the S/C to ensure efficient operation. The SCO staff consisted of five officers who rotated on 8-hour shifts around the clock. There was at least one SCO on duty at all times in the S/C. The SCO was responsible for the uninterrupted flow of traffic through the various branches of the Headquarters Signal Center. Each branch was headed by a Branch Chief, directly responsible to the SCO. A list of the Signal Center Officers of the Expansion Period will be found in Appendix B.

25X1

The SCO's duties were to interpret directives emanating from or passed through the Chief, Signal Center, to distribute these directives throughout the branches of the S/C, and to implement these directives into an established S/C policy by the issuance of necessary operating procedures; to maintain a log of all important events occurring in the S/C and prepare a daily report for the DCO via the Chief, S/C; to screen all outgoing cables in order to ensure their correctness of format and cryptographic security and to route them in accordance with existing Communications regulations; to authenticate and release crypto and radnote cables and be responsible for the distribution and delivery of same; to screen all incoming cables for the purpose of alerting specific divisions or individuals of required action and ensuring the correctness of cryptographic content, format, and routing; to initiate immediate corrective action upon a disruption of the communications facilities of the Agency; to keep ASCB informed of current procedures and operations, and provide them with duplicate

copies of pertinent S/C memoranda; to maintain adequate personnel coverage and maximum efficiency at all times; to prepare, evaluate, and/or review fitness reports for all S/C personnel under his jurisdiction, to recommend promotions as appropriate, to take disciplinary action when required, and to authorize leave in case of emergency; to make certain that all necessary security (physical, operational, and cryptographic) precautions were maintained by the branches of the S/C in order to protect the sensitive world-wide operations of the Agency; to maintain liaison, when necessary, with OC and other Offices of CIA dealing with operational matters of concern to the S/C; to supervise the compilation of the S/C Traffic Report for the DCO, and for appropriate OC traffic analysts on a daily and monthly basis; to direct Agency Telecons between Headquarters and field stations using electronic equipment in conducting such teleconferences; to act as Communications Duty Officer during non-organizational hours; also to act as Special Duty Officer during non-organizational hours for the sensitive cable traffic processed by the Special

Signal Center Branch (SSCB), and to conduct liaison with Agency officials concerned with this sensitive traffic; to implement the S/C disaster plan (fire/air raid); to maintain Conelrad Watch (Control of Electromagnetic Radiations); and to personally process (encipher/decipher, distribute, and deliver) cables of such great sensitivity that distribution was limited to one or two individuals in the entire Agency.

The Support Staff of the Signal Center Officer consisted of the Traffic Control Section and the Statistics Section.

a. Traffic Control Section

The Traffic Control Section (TFCL) maintained accurate, permanent logs for the accounting, referencing, and recording of all incoming and outgoing cable traffic passed through the S/C. This included assigning IN and OUT numbers, assigning check and message numbers to outgoing cables, and recording and routing relay cables. The traffic logs furnished vital information concerning each individual cable, assured a complete picture of S/C cable traffic operations

at all times, and showed at a glance the volume of material handled. The logs served as a central check point for the location of a cable in the S/C at the precise moment in order to ascertain the stage of processing, to facilitate servicing, and to ensure against extreme delay in handling or accidental loss of cables. High precedence cables were flagged for expeditious handling and were hand-carried throughout processing. Twice daily, log checks were initiated to make certain that messages had been handled in accordance with established policies, (i.e., logging, enciphering, deciphering, transmitting, etc.) and then mailed to the addressee.

TFCL took care of service messages from the field, and originated service messages to the field dealing with garbled or mutilated texts, incomplete messages, missing numbers, duplicate numbers, omissions, and other irregularities. They initiated appropriate action on all outstanding service messages to make certain the field stations had complied with the requests and that answers from the field station had been

relayed to another field station whenever necessary. It was the responsibility of TFCL to make certain that the appropriate distribution center received notification of corrections immediately upon receipt from the field. All service messages and crypto cables were filed by TFCL.

b. Statistics Section

The Statistics Section compiled and maintained operational data and related records on all stations within the CIA cryptographic network. Each station file contained a historical digest sheet, crypto/radnote cables of significant importance, all operational memos from Commo Security and/or Operations, and memos from the field station itself. In addition, each folder contained a group count sheet showing monthly group counts over the past year. These folders offered a complete history of the station at an instant's notice, and were considered an indispensible part of S/C operations. Duplicate copies of all memoranda were passed to ASCB for their files.

Crypto and radnote cables (including technical service messages) were distributed

only within OC. Each cable was carefully edited by Statistics personnel; it was their task to correct transmission errors, eliminate unnecessary repetitions, and certify the spelling of unusual words or place names. After the cables had been edited, distribution was assigned pursuant to existing regulations. The cable was then typed on a ditto-master, sufficient copies run off, and mailed to the addressee. Top secret cables were controlled by receipt system.

The Statistics Section maintained continuing station files. S/C original copies (including radnotes) were filed geographically by station number and retained for a period of one month after which they were transferred to CIA Cable Archives. Top secret S/C copies (including radnotes) were filed separately by station number and periodically forwarded to CIA Cable Archives.

The Statistics Section assisted in compiling the monthly load report from daily traffic reports, and compiled the monthly station report from IBM sheets forwarded by Office of

Communications, Security (OC/S). These traffic reports measured the overall operating capacity of the S/C and were invaluable as a yardstick for production figures. The Traffic Report conveyed the necessary information for determining present and future operational and personnel requirements.

c. CIA Cable Archives

The purpose of the CIA Cable Archives was to preserve by microfilming and filing and make available for reference reading, original copies of CIA cables transmitted to and received from CIA field stations, including lateral cables between CIA field stations.

The Archives maintained a file of all original incoming and outgoing CIA cables, separating them according to classification, station, and special type categories. Top secret cables which received limited CIA distribution were segregated by station from cables of lower classification. Technical OC cables (crypto) and S/C service-type cables of a permanent nature were segregated by station from all other cables.

All original CIA cables were microfilmed in duplicate and an indexed file by reel was maintained. The duplicate reel was dispatched to ASCB for permanent storage. Each reel contained approximately 2,250 cables. These microfilmed copies of cables were available to authorized CIA personnel for reference reading on the microfilm reader.

A file also was maintained by classification and station on all original copies of lateral (field-to-field) type cables pouched to Headquarters form the various CIA field stations. These were microfilmed and made available for review by the appropriate foreign division as desired.

3. Manual Cryptographic Branch

The function of the Manual Cryptographic Branch (MCB) was to encipher and decipher cables to and from CIA field stations by manual one-time pad (pencil and paper), strip system, and AFSAM-7 (rotor machine) cryptographic systems. It was imperative to simulate the manual cryptographic traffic of the various agencies through which CIA routed manual and AFSAM-7 crypto cables in order

to camouflage the true identity of CIA as the originator, thus protecting and maintaining the high degree of CIA operational security. The MCB kept and was accountable for all classified and registered cryptographic documents and devices transferred in and out of the Branch. An accurate record was kept of all material currently in use, and it was MCB's duty to notify the proper authority when stocks of cryptographic material neared depletion in order to assure adequate and timely refills of such material.

Too, they were responsible for drafting and implementing detailed manual cryptographic operating procedures; maintaining files of all periodic cryptographic changes; interpreting directives affecting MCB and fulfilling these directives consistent with operating procedures and policies of the Branch; drafting condensed operating procedure outlines for the manual and AFSAM-7 cryptographic systems to serve as operational reference guides and to coordinate these operating procedures with the proper authority for compliance with security regulations and for conformity with

the existing policies of OC. In addition, MCB was to indicate to the proper authority all security and procedural violations discovered in the use of these systems; to note minor discrepancies of field stations; and to recommend corrective action when necessary.

One of MCB's most difficult and important functions was to decipher, when possible, garbled and badly mutilated messages (employing highly technical communications methods), reducing the need for retransmissions, thus speeding up delivery of cables and saving the organization unnecessary expenditures.

Included in the scope of CIA covert operations were certain highly sensitive, clandestine field stations and individual agents which demanded the ultimate in secrecy by participating parties. In order to protect the unique security aspects of these field stations and/or individual agents, the Projects Section was established in the S/C, thus providing separate encoding and decoding facilities for the processing of traffic between Headquarters and the clandestine elements

in the field.

The cryptographic systems employed by this section varied from the routine manual cryptographic systems employed by MCB to the special, highly complex secret codes and ciphers which required extensive knowledge of the art of cryptography as well as a working knowledge of the theory of cryptanalysis. The material sent or received might have been transmitted in a variety of foreign languages, necessitating the ability of the Projects personnel to have at least a working knowledge of one or more foreign languages.

Incoming messages were usually received in a badly mutilated condition due to unique cryptographic procedures or systems and complicated transmission means dictated by operational security. However, an attempt was made to decipher all incoming cables, no matter how badly mutilated and garbled, since it was not always possible to secure a retransmission or reencipherment.

Outgoing cables were very carefully

and meticulously enciphered, so as to be absolutely certain NO errors were committed which would compromise the field station or individual agent.

The Projects Section was responsible only to the SCO for releasing material for transmission. Accuracy and efficiency on the part of the personnel of the Projects Section had to be at its peak at all times in order to protect the vital security interests of not only CIA, but the United States as a whole.

4. Machine Cryptographic Branch

The Machine Cryptographic Branch (TTYB) was a complex of machinery and devices necessary for the hub of the Agency's network of communications. These included several on-line and off-line one-time tape machine cryptographic systems. The Machine Branch utilized innumerable routings and circuits, each to suit a particular procedure. The routings and circuits were constantly revised and changed, thus necessitating frequent variations. TTYB was charged with the responsibility for simulating traffic of the cover agency over which CIA traffic was to be transmitted.

The equipment could be interchanged to such an extent that it was possible to contact any part of the United States or the world by numerous routing and relaying procedures over a wide variety of circuits to suit any particular emergency which might arise at any time.

The purpose of the Machine Cryptographic Branch was to transmit and receive classified cables for CIA and other Government Agencies on a world-wide basis, utilizing varied and complex routings, and to ensure that these cables were transmitted and received securely and as expeditiously as possible. Wire liaison was maintained with the Chief Supervisors of wire rooms at the Department of State, Department of the Army, Department of the Navy, and the Department of the Air Force in order to conform with their procedures. It was also necessary to maintain wire liaison with the Duty Officer, Office of Current Intelligence (OCI), CIA; to conduct wire liaison with the Signal Center, Office of Operations, Contacts Division (OO/CD), CIA, Washington, for the purpose of maintaining proper communications coverage

with all OO/CD field stations via ASCB; to maintain wire liaison with Western Union and the Bell System (TWX) in order to determine the fastest and most inexpensive routing to points where CIA might send cables which could not be routed by military means and to determine the proper routing on commercial circuits. An accurate record of commercial cables transmitted and received via Western Union and TWX was kept for the purpose of checking monthly charges for any discrepancies.

A daily wire and load report was compiled which included traffic volumes, total cables and groups transmitted and received on each circuit, domestic and foreign. Also included in these reports was the breakdown of the various manual and machine cryptographic systems utilized.

The TTYB was also charged with implementing various circuit (cryptographic and routing) changes as directed by the Chief, S/C; accounting for all registered cryptographic material within the Branch and ensuring distribution of refills to field stations before current supplies of crypto-

graphic materials were exhausted; transferring equipment (utilizing a switchboard patch system) when circuits became inoperative due to equipment malfunction or line troubles; and keeping a deviation in procedure file on all machine cryptographic field stations to consolidate minor procedural discrepancies so that if repeated discrepancies occurred, OC/S could be notified to take appropriate action.

They were further charged with compiling monthly, quarterly, semiannual, and annual telecommunications engineering reports which included summaries of originating traffic, sample analysis of originating flow, and fixed Communications Directory.

No less important, TTYB activated station-to-station (on-line) Telecons using a secure machine cryptographic system between various government intelligence agencies as required, and operated classified teleconferences with CIA field stations according to prearranged schedules. Such use was limited to messages which justified transmission by electrical means. In conjunction

with the operation of the teleconference it was necessary to maintain constant liaison with the Radio Control Officer of the Department of the Army, located in the Pentagon, to ensure continuous service to and from the field. TTYB also acted as a relay point for highly classified, high precedence traffic to and from an overseas post for other government agencies, such as Department of State, National Security Agency (NSA), etc., and served as a relay point during emergency periods for transmission and reception of high precedence traffic from overseas points to various government agencies when normal facilities abroad were interrupted.

Very high precedence Communications Instructions for Reporting Vital Intelligence Sightings (CIRVIS) messages received over various Defense Department Communications facilities originating from both domestic and foreign points were immediately transmitted to the OCI Duty Officer via an existing classified cryptographic link.

TTYB conducted weekly tests from emergency sites to determine the feasibility of

operation should an emergency arise, thus making sure that the Agency's emergency wire communications facilities in the Washington area were operative.

An additional responsibility for TTYB was to serve as a superencryption relay point for the transmission of highly sensitive special projects traffic.

5. Special Signal Center Branch

The Special Signal Center Branch was self-contained and was responsible for processing especially sensitive traffic which required strict compartmentation from regular traffic for security reasons. Numerous special clearances were required for all personnel assigned to SSCB. The branch was off limits to all personnel except those specifically cleared. Personnel of SSCB logged, enciphered, deciphered, transmitted, received, processed, and distributed cables falling within the especially sensitive category. Plain text copies of messages were NEVER viewed by unauthorized personnel. Outgoing cables were handcarried by special couriers directly to SSCB;

whenever special couriers were not available, SSCB personnel personally delivered or picked up cables. SSCB also served as a relay center between Special Communications annexes in Washington and in the field.

6. Alternate Signal Center Branch

The Alternate Signal Center Branch was created in 1951 and located at [redacted] 25X1

25X1 [redacted] Its purpose was to provide world-wide communications for Headquarters in the event that normal Washington communications were disrupted in time of war or civil uprising or other disaster, and to encipher and decipher via manual and machine cryptographic systems the OO/CD classified traffic to and from domestic stations for which they were in contact.

In virtual parallel with Headquarters S/C, though working quite independently, ASCB carried out similar operations. They maintained a 24-hour day, 7-day week operating schedule, reporting directly to the Chief, Headquarters S/C on the operational aspects of the branch; maintained an

administrative structure of the personnel assigned to them, reporting [redacted] Commo Officer on the aspects involved; operated circuits in transmitting and receiving traffic for OO/CD; ran tests on emergency teletype circuits at various times in order to prepare such circuits for workability in case the need arose; maintained a duplicate of operational files and preserved a storage file on the microfilm reels of cable archives forwarded from Headquarters, S/C; kept a ready file of emergency cryptographic material on a world-wide basis; activated any emergency teletype circuit for which equipment was available as directed by the Chief, Headquarters S/C. ASCB held duplicates of all station dossiers and statistics files so that any disruption of Washington S/C would not affect the overall communications picture.

25X1

7. CIA School of Cryptography

The CIA School of Cryptography was

[redacted]

25X1

The instructor staff for the school was supplied originally by the Army Security Agency (ASA) and the Armed Forces Security Agency (AFASA). By the

mid-1950's there was a predominance of S/C personnel as instructors. In addition, the S/C conducted necessary liaison [redacted] in order to keep the school advised of changes in S/C operating procedures. 25X1

Except for expansion, the basic organization of the Signal Center changed little during the next few years. The departmental responsibility for the various phases of the work remained essentially the same.

25X1 [redacted] succeeded Mr.

25X1 [redacted] as Chief of the Signal Center, serving from July 1957 to June 1959. He soon found the "Communication hub" of the intelligence world inundated by fast-recurring crisis situations. [redacted] 25X1

25X1 [redacted] recalls that [redacted] expressed amaze- 25X1
ment at the long hours and the tedious but diligent performance of the Signal Center, claiming it to be unbelievable and incomparable.

The majority of stations in the Middle East and in South America areas were one-time pad (OTP), making it an almost impossible chore

to process the large amount of multiple address intelligence reports being filed daily to these areas. It was by [redacted] persistence with Communications Security (COMSEC) that the Signal Center was aided by a large multiple pad system (one which was a 16-way) to facilitate the handling of the large and constant growing volume of these reports.

25X1

25X1

[redacted] also found himself responsible for the establishment and management of the "Q" Building Communications Center. SI traffic had increased to the point that all government facilities in the Communications Intelligence (COMINT) field required complete revamping. President Eisenhower's request for vast improvement in the method of dealing with Critical Intelligence (CRITIC) also resulted in complete upgrading of the COMINT networks. NSA was the Agency chartered and resourced for the improved media, and consequently provided both the equipment and installation for the first on-line cryptographic machine. The KW-26 operation at "Q" Building became a popular attraction to a host of officials. 6/

The volume and scope of operations increased during [redacted] tenure of duty; however, there was no significant change in overall Signal Center organization. He did, however, institute the policy which eliminated all scheduled overtime, which led to the initiation of a variety of unprecedented schedules with staggered work weeks.

25X1

B. 1959-62

[redacted] was Chief of the Signal Center from September 1959 to May 1962, during which time he was instrumental in its reorganization on a trial basis, the aims of which are described in Attachment D. [redacted] served during the era of drastic change brought about by the advent of the KW-26, allocated circuitry and development of the Agency's on-line network which was given the name AXANET. With the intense desire to gain the maximum usefulness from the resources at his disposal, he endeavored to modify whatever careful analysis proved necessary for increased effectiveness. He was instrumental in changing the internal cable format

25X1

25X1

procedures so that cables, as received, could be distributed to the addressee and others concerned in an acceptable form with minimal processing.

Another really important change came in 1960, when the Headquarters Signal Center finally obtained the necessary sanctions to operate as an "all source" communications center. Prodigious effort went into negotiating the multitude of security policies and procedures governing the handling of SI information to achieve this sorely needed status. Priority was first given to the integration of every category of traffic, personnel, and facilities into one harmonious system, thus establishing a self-contained CIA network. A completely unique innovation, this character continues to distinguish CIA as the only communications facility with full capability for handling all types of traffic. 7/

25X1 It was [redacted] who introduced the "three team" concept to the Signal Center. This innovation required each team to be so similarly structured that they could function in all aspects as separate entities. The overall objective was

to establish an esprit de corps so that each shift would operate naturally as a self-supporting cohesive unit which would enhance the overall operational efficiency and effectiveness.

25X1 [redacted] also established an operational staff structure with functions not only to administer to the complete needs of the Headquarters Signal Center, but actively to engage in the procedural discipline for the world-wide staff Communication network. 8/*

25X1 [redacted] (Staff Communications Security)
25X1 and [redacted] (Communications Instructions for Use within AXANET) were progenital legacies of this staff structure. Responsibility was subsequently transferred to the Office of Communications, Telecommunications (OC-T) when their Systems Operations Branch was activated. Additionally, the first Agency document for standard procedures in the operation of the new electronic KW-26 crypto system was written by S/C personnel.

During the period between 1959 and 1962

---

* See Attachment E

much time was spent in planning the move to the new building. This included foreseeing and providing for the difficult task of running separate facilities in both "L" Building and the new building until all functions could be phased out of the former. The transition proceeded smoothly and without interruption in communication services until it culminated on 10 March 1962, just prior

25X1

to the end of [redacted] tour as Chief, Signal Center. Operational adjustment to the new Signal Center went extremely well notwithstanding the fact that the new Signal Center facilities and operational methods were significantly different from the old. The Signal Center structure in the new building is depicted in the Organization Chart of 1962.*

1. Office of the Chief, Signal Center

Responsibility for the overall administrative and operational control of the S/C rested with the Chief. His duties and responsibilities remained essentially the same as previously noted. He was responsible on a 24-hour

* See Figure 2, p. 36

SIGNAL CENTER -- 1962

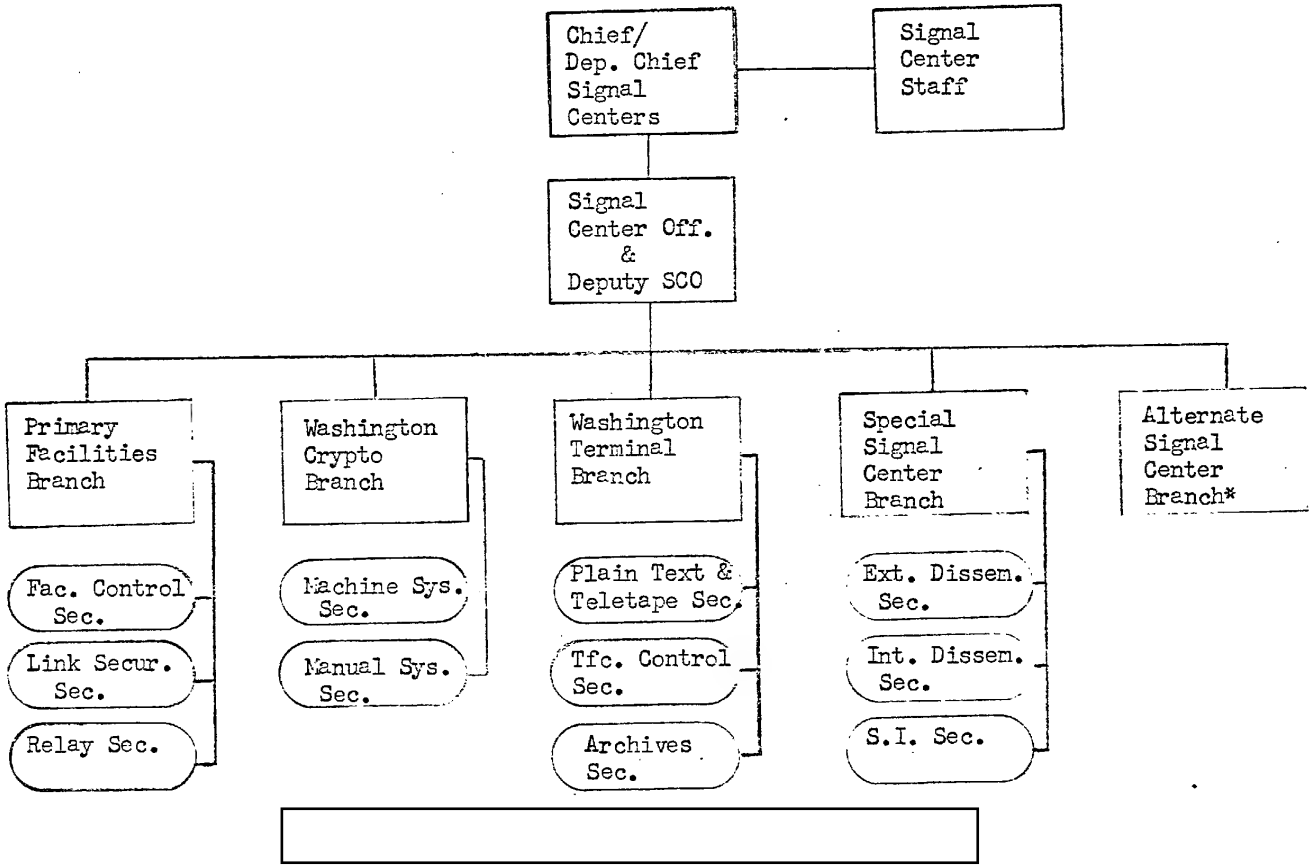


Figure 2. Organization Chart of S/C 1962

25X1

day, 7-day-a-week basis for the enciphering, deciphering, receiving, and transmitting of all classified electrical communications passing between Washington Headquarters and CIA field stations, and between stations not having lateral facilities. In addition, the Headquarters Signal Centers were responsible for providing cryptographic and electrical transmission services for passing Special Intelligence communications between CIA and other members of the local intelligence community.

The Chief, Signal Center, managed the overall operation of the S/C and kept the DCO advised on all matters of interest. He undertook special projects and assignments as required and directed by the DCO.

The Chief was charged with the responsibility to monitor and review administrative, procedural, and policy practices as they pertained to S/C administration to ensure conformance to OC policies and practices. He evaluated trends and made recommendations for changes in S/C telecommunications, policy making, procedures, and

equipment to cope with and provide more rapid and greater expanded traffic service.

It was the duty of the Chief to coordinate and provide staff guidance on general S/C planning and overall operation. He represented the S/C on operational, technical, and engineering details with other OC officials for effective and efficient Headquarters installation and planning; conducted reviews relative to equipments and recommended the necessary equipment programming in order to fulfill the Headquarters S/C support requirements as projected from one fiscal year to another; devised and recommended appropriate equipment arrangements, circuit activations, installations, and initiated all necessary follow-up control actions to ensure that these methods were clearly defined to operational personnel; reviewed the general S/C programs in order to identify and advise appropriate OC elements on network and circuit capacity, Agency programs, traffic trends, and changing conditions which affected the overall operational support requirements; provided immediate guidance on circuit matters, directing

routing alternatives within the purview of Headquarters network control; and provided technical assistance to other OC components based on actual S/C experience regarding equipment feasibility and circuit planning as required and/or requested.

The Chief maintained close liaison with the C/S and appropriate CIA "watch" personnel on all matters pertaining to traffic; and conducted continuing liaison with Agency operated components relating to S/C traffic, particularly on special projects traffic.

The Chief planned and directed the Headquarters S/C training program which was designed to indoctrinate and instruct new employees, overseas returnees, and contingency personnel in specialized procedures, to provide on-the-job training in standard circuit and operating methods and in testing and operating newly developed equipments; and to provide general proficiency training in the overall S/C structure and operation. He supported both staff and special intelligence S/C communications training requirements.

2. Signal Center Staff

The Signal Center Staff was responsible for the writing of procedures, manning schedules, training programs, equipment and planning programs, crypto planning, and statistics. The staff also was the focal body for liaison and all coordination.

3. Signal Center Officers

The SCO maintained the operation of the S/C on a 24-hour day, 7-day-a-week basis as previously described. He compiled and maintained schedules in order to ensure thorough coverage at all times by shifting personnel between branches and by calling to duty any available personnel when needed. In this connection, the SCO prepared advance overtime estimates and requirements for weekends, holidays, and emergencies, and audited and controlled amounts of overtime allotted on the basis of past, present, and anticipated workload.

The SCO reported to the Chief, S/C as required, on security and operational matters within the S/C, and proposed constructive changes,

if necessary, to existing procedures and directives governing S/C operations.

It was the responsibility of the SCO to maintain the necessary security precautions which always must be considered in order to protect the highly classified cryptographic and telegraphic systems and procedures used by the Agency.

All outgoing cables were released by the SCO, and he reviewed all incoming traffic. Some cables came through the S/C which did not receive Commo distribution; the SCO supported the DCO by pulling copies of anything that he considered of a communications interest to the DCO.

One of the duties of the SCO was to manage all "restricted handling" cables. When the volume increased beyond his control, the responsibility was directed to the senior section supervisors.

A primary responsibility of the SCO was to coordinate the activities of the S/C branches to ensure that related procedures were properly implemented and to assure effective and expedi-

tious handling of traffic.

4. Primary Facilities Branch

The Primary Facilities Branch, which evolved from the Machine Crypto Branch, was the hub of all circuitry coming in and going out of the S/C. This included on-line and unclassified external circuitry.

Three sections comprised the Primary Facilities Branch. The Facility Control Section ensured quality control of equipment and circuitry. The Link Security Section was responsible for the encryption and decryption of traffic, using the KW-26. The Relay Section was responsible for torn tape relay of classified clear text traffic for both internal and external circuitry.

5. Washington Crypto Branch

The Washington Crypto Branch handled all off-line cable processing. The Machine Systems Section had as its responsibility the enciphering of traffic on the KL-7 and the OTT, both off-line systems. The Manual Systems Section enciphered traffic in OTP, both literal and numerical.

6. Washington Terminal Branch

The Washington Terminal Branch was responsible for the processing of originated (OUT) and terminated (IN) staff messages. The Plain Text and Teletape Section managed the incoming delivery for staff traffic plus the processing of teletapes. Traffic Control Section performed the same functions as previously described.* The Archives Section continued the microfilming and filing of CIA cables. In 1963 the Archives Section was transferred to the Cable Secretariat.

7. Special Signal Center Branch

The Special Signal Center Branch was responsible for processing SI, COMINT, and Electronic Intelligence (ELINT) traffic. It was segregated from other S/C operating facilities due to policy regulations for handling and processing SI traffic. SSCB consisted of three sections. The External Dissemination Section took charge of the United States Intelligence Board (USIB) Broadcast. The Internal Dissemination Section

---

* See pp. 13-15 preceding

was responsible for handling all traffic on the internal Langley Building circuits. Distribution was assigned and messages were electrically disseminated to Foreign Intelligence, Division D (FI/D), OCI, and others. The SI Traffic and Message Control Section were charged with the processing of SI originated and terminated messages.

8. Alternate Signal Center Branch

Procedures and operations followed in ASCB remained the same as previously described.*

C. 1962-66

25X1 [redacted] tenure of office terminated in May 1962. From then until August 1962 Mr.

25X1 [redacted] acted as Chief, Signal Center.

25X1 [redacted] replacing [redacted] entered on duty in August 1962. [redacted] during his brief tenure of duty (August 1962 to October 1962) established a Task Force for the purpose of studying various means to update operations and procedures. The Task Force consisted of Messrs.

25X1 [redacted]

25X1 [redacted] The thorough study made by these

* See pp. 28-29 preceding

members was completed in October 1962, prior to
25X1 [redacted] departure, and they submitted recommendations for revamping structure and procedures. These may be reviewed in a memorandum for Chief, Signal Centers, OC.*

From the time [redacted] left in May 1962 25X1
(during the brief tenures of [redacted] as 25X1
25X1 Acting Chief and [redacted] as Chief) [redacted] 25X1
25X1 [redacted] assumed the duty of Deputy Chief, Signal Center. Disarmingly easygoing by nature, his broad firsthand experience of the work and the overall know-how facilitated the smooth, uninterrupted continuity during the transitional period in both personnel administration and coordinated operations. A sincere and dedicated worker through the years, he had long enjoyed the esteem of his colleagues. In his new capacity of greater responsibility he readily obtained willing cooperation from all under his control, generating an increasing sense of involvement during the decisive period leading to and embracing the Cuban Missile Crisis.

---

* See Attachment F

25X1 [redacted] became Chief, Signal Center, on 22 October 1962. Prepared by almost two decades of diverse duty in Headquarters and assignments overseas, [redacted] was able to 25X1 call on a richly varied background knowledge in facing a soon-to-be uniquely challenging responsibility. His naturally placid manner provided a well-anchored foundation during the immediately subsequent changeover to computerization. The very nature and unremitting urgency of Signal Center operations called for planning ability of an extremely high and almost intuitive order, which, 25X1 coupled with [redacted] innate capacity for resilience under pressure, smoothed out what could have been a most nerve-racking transition for all concerned. Undemonstrative in manner, he worked with quiet and unflagging dedication which has set a consistently challenging but demonstrably attainable standard, clearly reflected by all under his direction.

25X1 [redacted] tenure of duty was destined to become the most difficult and trying period in the history of S/C operations. This was due to

the advent of the technological explosion and communications revolution with its introduction of new and more complex communications systems and the dawning of the computer age and evolution of second/third generation computer systems.

The operational staff structure was firmly effected late in 1962. Some of the significant changes are noted in a memorandum from the Chief, Signal Centers, OC.*

The period from 1962 through 1966 saw further changes in the S/C organization. These are shown in the chart of 1966.** The greatest impact on the position of Chief, S/C, was in the planning field. Plans for the installation and implementation for the automation of S/C facilities and implementation of entirely new communications systems in Secure Data, Graphics, and Voice Field were completed during this period. Additionally, plans were completed and portions of the plan implemented to organize a [redacted] 25X1

* See Attachment G

** See Figure 3, p. 48

SIGNAL CENTER — 1966

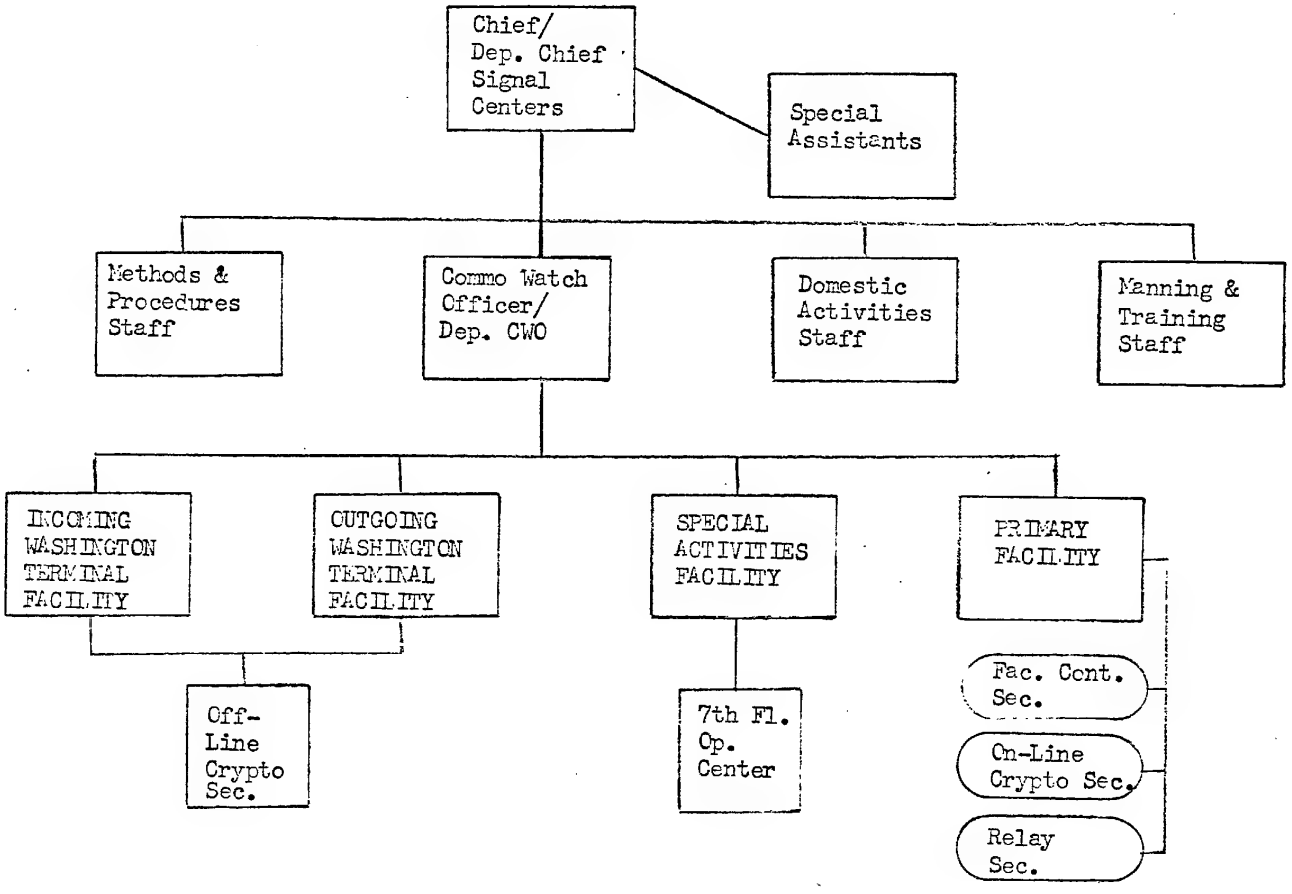


Figure 3.
Organization Chart
of S/C 1966

SECRET

25X1 [redacted] pulling together the many widely scattered domestic field activities and stations under one "area chief."

1. Office of the Chief and Deputy Chief, Signal Center

Most of the specific duties and responsibilities of the Chief, S/C, and his deputy remained basically the same with the exception that the S/C became involved with the planning and introduction of new communications systems and was given the added responsibility for the operation of the domestic field stations. The latter was the beginning of an attempt to centralize responsibility for the operation of communications facilities of the domestic stations [redacted] 25X1

Heretofore these had been administered by several different OC components. By the end of April 1965 the S/C had accepted responsibility for 22 stations. *

* See Attachment H

2. Special Assistants

Late in 1966 a Special Assistant for Plans and Automation was established in the Signal Center. [redacted] was designated this responsibility which included the preparation of plans for the introduction of new equipments to the S/C and the participation with other components of OC in the presentation of operational plans for automating the Headquarters Signal Center torn tape relay facility and various terminal facility functions.

25X1

During the latter months of 1966 a Special Assistant for Engineering, [redacted] was assigned to the S/C. His duties were to coordinate the planning for new equipment and automation with Office of Communications, Engineering (OC/E) from a technical standpoint.

25X1

25X1

3. Methods and Procedures Staff

The Signal Center Staff was renamed Methods and Procedures Staff. It performed basically the same functions as before * with the ex-

* See p. 40 preceding

ception that more time was devoted during this period to automation and new communications systems planning. By the end of 1966 a new Plans and Automation Staff was on the drawing board, assuming the responsibility for all programming, budgeting, and planning for the S/C.

[redacted] 25X1

5. Manning and Training Staff

The Manning and Training Staff under the direction of [redacted] initiated, 25X1 acted upon, and monitored each Communications Technician/Cryptographer (CT/C) in his career growth and development within OC. The Manning and Training (M&T) Officer was responsible directly to the Chief, S/C.

The M&T Officer reviewed the folders supplied by the Office of Personnel and Office of Communications-Administration on all prospective employees. He assessed and selected individuals for pre-employment interviews. After the interviews he judged the candidates to determine whether they met CIA's code of conduct standards and whether they were qualified in experience and training to become a CT/C.

After specialized training for new employees [redacted] the M&T Officer supervised the individual's post-training before assignment to a working position. He had two training officers who were responsible for all types of training.

25X1

The M&T Officer initiated and controlled all administrative "green sheets" for the assignment of personnel to overseas stations and to Special Projects Activities. Upon an individual's departure to or return from an overseas position, the M&T Officer was responsible for the assessment of the individual's skills, and planned for his training and retraining as needed prior to a new assignment.

The M&T Officer assigned and maintained distribution and balance of personnel for the three S/C operating shifts through the GS-11 level to ensure adequate staffing to meet operational requirements throughout a work week. He was further responsible for providing administrative personnel listings to the CT/C Career Panel for action on all promotions through the GS-11 level.

An added responsibility of the M&T Officer was the training and maintenance of a contingency work force of about forty people drawn from various other Communications offices to supplement the Headquarters S/C personnel in the event of an emergency, and to ensure that there would be a sufficient working force to man ASCB in the event of a disaster.

The M&T Officer arranged for all CT/C interviews for transfer of an individual from Communications to another component of the Agency, or for individual termination of services.

6. Signal Center Officers -
Communications Watch Officers

The Signal Center Officer had the continuing responsibility for the coordination and implementation of all communications functions, including personnel, communications security, engineering, training, circuits, and all aspects of support to the operating elements of CIA. Additional responsibilities were placed on the SCO with the ever-expanding activity of the Agency.

In a memorandum for the Deputy Directors, Plans, Intelligence, and Research thru the Deputy Director, Support, it was made known that the SCO was available at all hours outside of normal duty hours as a reference point for all matters requiring OC action and could provide information concerning the communications situation, circuit conditions, and traffic flow around the world. 10/*

In June 1965 additional equipment

* See Attachment I

and circuitry was installed in the newly created CIA Operations Center (OPSCEN) to provide Telecon facilities with overseas DD/P stations which had Telecon capability. Circuitry was also available to provide for electrical delivery of messages from a DD/P field station to the OPSCEN when required in a crisis situation. A 24-hour pneumatic tube connected OPSCEN with the C/S and S/C for the purpose of filing outgoing messages to the intelligence community or DD/P field stations. 11/*

The DCO requested that the SCO obtain all the information possible about a crisis situation when it occurred. The SCO accumulated Agency and Non-Agency cables concerning the crisis and checked with the CIA Watch Officer for any additional information. The area staff chief of the Operations Division, Office of Communications, (OC/O) was immediately alerted when a crisis occurred so that he could come to the office of the SCO to screen all the information available and be advised of any action taken to provide

---

* See Attachment J

communications support.

Cables which required "extremely sensitive handling" were brought directly to the Chief, S/C, or the SCO. In those special cases, the SCO assumed the responsibility of clearing the outgoing cable through the C/S. Such cables were restricted to one senior operator to be enciphered in the appropriate off-line system. Procedures necessarily differed for each particular circumstance and station, and there was no substitute for the good judgment which the SCO exercised in each particular instance.

Many cables required very delicate handling and were treated in a highly restrictive manner and without further discussion. In spite of all the sensitive material channeled through the S/C there NEVER has been one known security leak.

In October 1965 the Signal Center Officer title was changed to Communications Watch Officer (CWO).

The CIA Operations Center was operative round-the-clock. The Clandestine Services

Duty Officer (CS/DO) was responsible for reviewing cables for the DD/P and ensuring that appropriate action was taken. He provided assistance to the Operations Center Senior Duty Officer (SDO) by providing information in response to requests. The CWO maintained liaison with the CS/DO on all communications matters and was the point of contact during other than normal working hours.

At the request of the DCO, the CWO established contact with OPSCEN whenever there was a political or communications crisis in order to determine whether or not there was collateral information available on a situation which might influence the CWO in his actions. It was essential that he be alert in obtaining maximum information on any unusual problem and then communicate this to the appropriate people. When there was information to be passed on, the CWO contacted the appropriate Commo Ops Division who in turn was responsible for notifying other officials in OC, State, or CIA.

In the S/C there was a continuation of essential activities during other than normal

working hours. The CWO served as OC duty officer and was the point of reference for matters requiring after-hours action by OC. This involved various responsibilities and procedures as noted in Office of Communications Order No. 1-56 12/* and Office of Communications Order No. 40-65. 13/**

7. Signal Center Facilities

The various Signal Center Facilities were streamlined to bring about greater systematization. The Incoming Washington Terminal Facility was responsible for processing incoming staff terminated messages while the Outgoing Washington Terminal Facility processed outgoing staff originated messages. The Off-Line Crypto Section performed the encryption and decryption of off-line cryptographic systems, both OTP and OTT, but on a much reduced scale due to the rapid escalation of on-line cryptographic operations.

The Special Activities Facility was accountable for processing Agency and Non-Agency

* See Attachment K

** See Attachment L

SI (COMINT/ELINT) traffic, as well as other agency and non-agency "hold down" traffic, and the operation of the 7th floor communications center located in the CIA Operations Center.

The Primary Facility had as its responsibility the operations of Facility Control Section, On-Line Crypto Section, and Relay Section. The Facility Control Section continued to perform quality control and technical control functions associated with internal and external circuitry. The On-Line Cryptographic Section basically continued to operate the KW-26 equipment. However, a new electronic key generator (KG-13) was introduced at the end of 1966 and was used on a limited basis. The Relay Section performed the torn tape relay function for the Headquarters S/C, tying in the major trunk circuits of AXANET world-wide with local terminals and communications centers in the Washington area.

III. Personnel

The whole, being no better than the sum of its parts, Signal Center operations left much to be desired after the chaotic activity imposed by the Korean War. Of the already inadequate number of trained personnel many were sent overseas and replaced by raw recruits. It was known at that time that the component was incapable of handling even the routine load, much less supporting projected increases. The demands made by this highly volatile contingency strained its effectual capacity to almost the breaking point.

The recruitment of experienced Signal Center personnel was comparatively easy in the late 1940's because of the availability of World War II crypto trained operators still uncommitted to careers in other fields. By the time the Korean War started most of these cryptographers had already settled into other careers. The availability of bright young trainees was curtailed by military demands on that general age bracket. Establishing stepped-up procedures to recruit desirable personnel was slow and cumbersome from time to time because of

new Agency policy, new Agency hierarchy, political expediency, or, under the stricture of general belt tightening, a freeze would be put on further employment until the ecomony measure was relaxed. The time taken to get things rolling again after complete inertia understandably resulted in the loss of partially processed employees who had accepted other employment. 14/

Critical personnel shortages persisted throughout the Expansion Period. Continuing difficulties in procuring personnel were repeatedly pointed out by the Chief, Communications Division. In June 1951 he submitted to the ADSO and Mr. Lyman B. Kirkpatrick, Executive Assistant to DCI, a memorandum concerning the shortage of personnel. 15/*

Following is the July 1951 status of Headquarters S/C personnel** :

Authorization	
On duty	
Vacancies	

25X1

* See Attachment M

** See Figure 4, p. 78

At that time the Chief, Signal Center, presented the extremely critical conditions existing in the S/C in a memorandum to the Director, Office of Communications. 16/* The problem was the lack of an adequate T/O as well as an excessive number of job vacancies.

To ease the situation, [redacted] 25X1

25X1 [redacted] Assistant Director for Communications (ADCO), ordered activation of the Emergency Work Force Program. Former S/C employees skilled in S/C operations, who had been reassigned to other duties in OC, were invited to work 8 hours overtime per month to enable them to maintain their skills and keep abreast of the various S/C operations, so that they could perform crucial work with minimal supervision in times of crisis. It was optimistically hoped that his plan would preclude future flaps such as the one imposed by the Korean War. Unfortunately it fell short of expectations because personnel used on a part-time basis lacked the necessary current experience and the time taken

---

* See Attachment N

for on-the-job training and checking by regular personnel was disproportionate to the total amount of work produced.

Personnel procurement had always been a problem. Applicants for employment in the Agency had always been required to meet high standards in all areas of evaluation. But even greater challenges confronted the candidate for the communications organization, for which qualifications as to background, education, experience, and personality established only a basic eligibility. Communications personnel assigned to the S/C were those engaged in communications and related activities requiring knowledge of specific and general operational plans and understanding of the Central Intelligence Agency cryptographic systems. Because of the vulnerability of Agency matters through the communications media, unprecedented emphasis was placed on in-depth evaluation of individuals being considered for communications; recruitment procedures bent every effort to secure the highest type of employee for the Signal Center. Careful screening alone was but a preliminary to a candi-

date's consideration for this highly specialized work. Qualification depended as much on native talents, which had to be of a different order than would satisfy requirements for other positions in the Agency. The completion of inordinately long, uniquely searching questionnaires was required, after which many months might pass pending security investigations before clearance was granted. Moreover, after satisfying all initial requirements and meeting every special qualification, personnel would be called upon to complete additional forms from time to time.

Much valuable time was lost as the result of delays incident to obtaining full security clearances. Attempts were made to streamline procedures to the maximum in an effort to reduce the processing period. Further delay resulted when recruits could not EOD until clearances were granted. In some cases losses of personnel occurred because the applicant, of necessity, accepted other employment during the indefinite waiting interval. One anomaly of the recruitment system resulted from personnel being accepted for duty before passing the polygraph and

physical examination. Not infrequently the flunking of these important qualifications worked a genuine hardship on those already replaced by their previous employers who now found themselves without a job, particularly so in the case of married men with dependents. For many years the Chief of the Signal Center fought for pre-employment interviews for physical and polygraph. 17/ Urgent requests were made to accelerate the security clearance so that definite training of S/C personnel could progress. Personnel were trained in the various cryptographic systems used in the S/C, techniques of operation, and in many cases the servicing of communications equipment. Much of the training was given on the job. Therefore the entire procedure, from recruitment through processing and training and eventual assignment to specific duties followed a somewhat different course.*

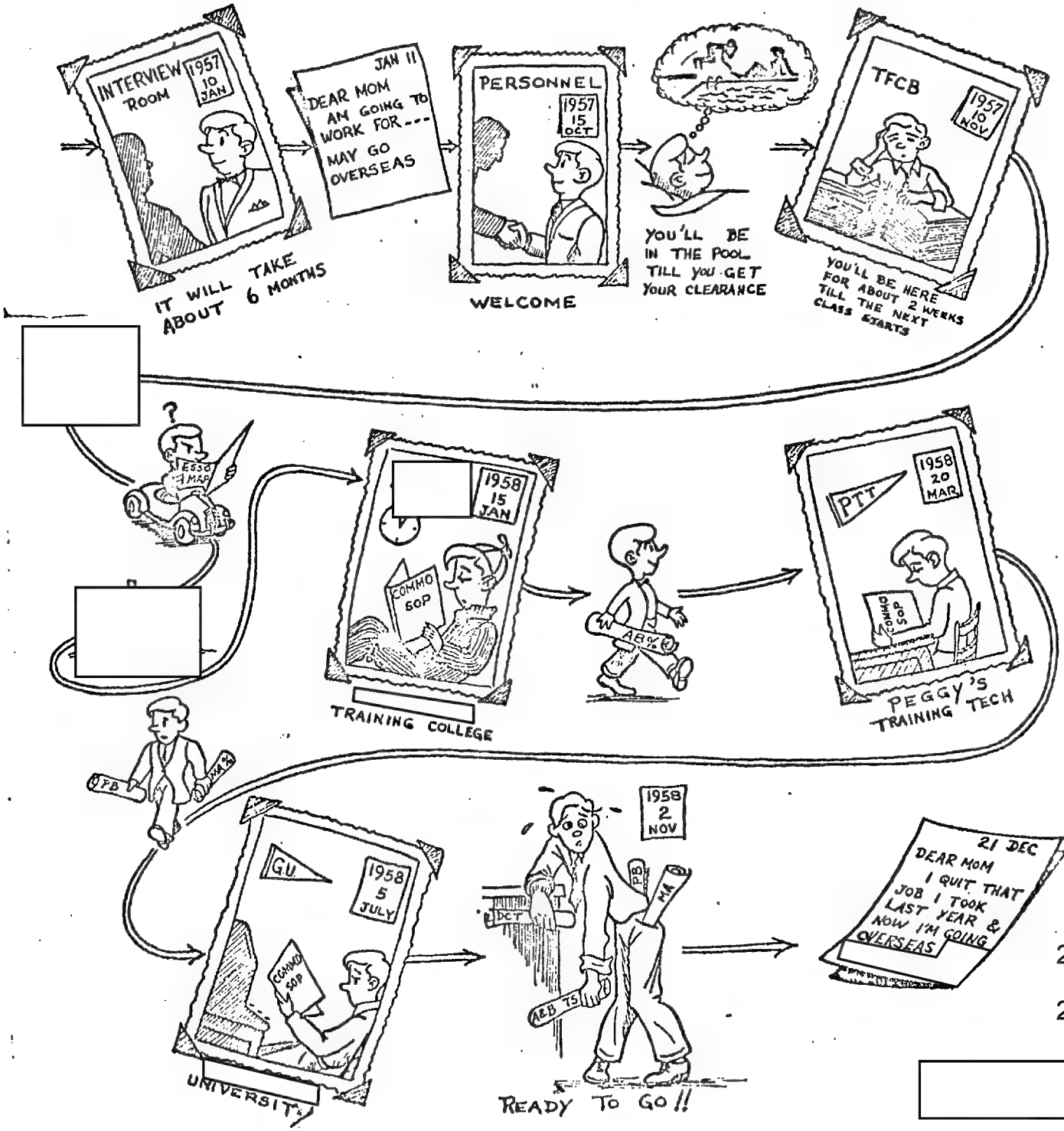
Employment in the Signal Center constituted an entirely new way of life, highly important to which was the capacity for ready adjustment to

---

* See Figure 8, p. 66

Figure 8

Diary of a CTC



rotating shifts and staggered work weeks, including Saturdays, Sundays, and holidays. Following changing schedules which transposed one's Saturday to Monday and one's Sunday to Tuesday imposed both physical and mental strain. Strict punctuality was mandatory, since "one replaced one" from shift to shift, the one being relieved of duty having to wait for takeover by his counterpart. Failure to report on time thus placed a burden on one who had already completed 8 hours of exacting work. Far from ideal, the working atmosphere was consistently polluted by high noise levels, crowded conditions, poor lighting, and the nature of the work itself proved aggravating - often frustrating. Its unremitting volume imposed constant pressure on operators and supervisors alike; the various operations were all governed by specific and binding regulations which intensified the strain. Without compromising accuracy nor jeopardizing security, the work still had to be handled with dispatch. Speed was always of the essence.

It was necessary that the S/C develop sufficient flexibility and resilience to deal capably

with unforeseen operational needs and/or peak work loads while allowing for the inevitable loss factors caused by leave, sickness, training, overseas processing, etc.

Notwithstanding the work-related tensions, nerve-racking noise, inadequate air conditioning, and many other difficulties, S/C employees recognized that their efforts in full-spirited teamwork provided a critical ingredient in all Agency activity, which provided motivation despite the highly wearing mandatory overtime schedules from 1951 until 1958 when regularly scheduled overtime was eliminated. Overtime was thereafter performed on a purely voluntary basis. Furthermore, this "family unit" cherished the prideful recognition that their unswerving loyalty contributed measurably to the Agency successes.

During the entire historical period covered, the Office of the Chief, Signal Center, was responsible for providing trained cryptographers and S/C personnel to serve not only at Headquarters but at most of the Agency's field stations. The need for additional personnel for overseas duty as

well as departmental people was perennial. In selecting the personnel for overseas duty it was necessary to evaluate the different job requirements and place the best suited individual in each position. While the nature of the work might appear to be identical at each station in that the primary function was to encipher, decipher, transmit, and receive in accordance with established procedures, in reality the requirements varied considerably from station to station. Low volume stations invariably used the OTP crypto system; intermediate volume stations used the OTP and mechanical rotor devices; and the highest volume stations were eligible for the one-time tape (OTT) systems which offered greater speed. Each system incorporated different skills and techniques that required many years of experience to develop to the professional degree expected of Agency cryptographers. Transmission means also varied in accordance with the cover organization, and these intricate details placed further demands on the cryptographer. Personnel often performed various other duties at the field stations not associated with their basic

communications functions. Use of personnel for non-communications duties had to be considered. An appreciable percentage of their time might be spent on photostatic and photographic work. Other duties performed were in areas of property and supply, finance, filing, typing, and a variety of general clerical tasks. They might also be expected to act as chauffeur or courier. To select personnel to meet such requirements was not a simple task. Conditions at some overseas posts were such that only single men could be accomodated while other posts were well suited to family living. Thus, the reassignment of personnel demanded much more than merely entering names on a roster.

The ever-present difficulty in obtaining sufficient numbers of trained personnel proved a continuing drawback to the expansion of communications facilities to cope with rapidly increasing operational demands. Shortage of qualified, adequately trained personnel to man stations in overseas installations made it difficult to meet commitments and responsibilities. Rarely was manpower fully adequate to the tasks.

With the establishment of a CIA Cable Secretariat in 1952 there was necessarily a realignment of personnel. Option was given to the S/C Processing Branch personnel to remain with Communications or transfer to C/S. Many of the S/C functions designated to become the responsibility of C/S were not transferred immediately due to lack of experienced personnel on the staff of C/S. However, with the transfer of some of the positions of the S/C Processing Branch to C/S there was also reassignment of some S/C personnel, though the full turnover of responsibilities was not completed until several years later.

Due to budgetary restrictions personnel ceiling limitations were imposed on the Central Intelligence Agency on 30 June 1953 and in turn on the Office of Communications. 18/* The imposition of the ceiling precluded acceptance of any new commitments. It was therefore necessary to deploy existing personnel to those areas where they could be used to greatest advantage. Because of the constantly changing workloads con-

---

* See Attachment O

fronting the various operations within the S/C, it was highly desirable that the personnel develop versatility in order to perform whatever type of work might be required of them from time to time.

In the early 1950's personnel involved in logging, encrypting, decrypting, and paraphrasing of messages in the manual systems, consisting of double transpositions (DT), strips, machine rotor systems, OTP, and OTT, were referred to as code clerks or cryptographers and were designated as CT/C's.

In 1958, with the advent of the KW-26 electronic key generator, a cryptographer no longer needed to laboriously encrypt/decrypt each message individually by hand; however, he had to learn the new and more complex methodology associated with the operation of an on-line system. Within the next five years, the classified manual torn tape relay centers were in operation around the world. Therefore, in addition to the CT/C's acquiring skill in operating the KW-26, he had to learn the various routing doctrines in use, familiarize himself with transmission systems, and learn the operation of

classified torn tape relay centers and terminals.

Later it became evident that even the increased speed of the KW-26 would be inadequate and that the adoption of additional new techniques would be necessary. One of the first steps was automation through the use of computers. This brought an added requirement, for the CT/C now had to be trained in the complex operation of an automated switching system. It was obvious that the CT/C of the mid-1960's had to possess greater knowledge than his predecessor of the 1950's. His duties were more technical and infinitely more complex and diverse. He required many more hours of training, was required to retain a wide variety of specific and general knowledge, and to absorb new communications systems and techniques with a minimum of training and readjustment. He was no longer just a code clerk or cryptographer but a well-trained Communications Specialist (CS) who was able constantly to adjust and readjust to keep pace with the rapidly changing communications world. 19/*

---

* See Attachment P

S/C personnel were always an important element in the communications system and became increasingly more important as new sophisticated equipments were adopted. As preparation to manage, supervise, and operate these systems competently and professionally, it was necessary to embark on an extensive program not only to improve personnel but to improve grade structure and career management practices.

Prior to the final move to the new building in 1962 there were two Headquarters Signal Centers in operation. This naturally placed a strain on the limited numbers of personnel who had to man both units. Pressures on the S/C increased in direct proportion to overall planning, implementation of which progressively called for increased personnel, enlarged facilities, and improved techniques. All this brought with it new responsibilities; these and the ever-growing volume of material to be handled increased the S/C operating workload to the point where additional personnel became imperative to maintain normal communications support.

The S/C personnel status, while showing some improvement, was still far from satisfactory. Shortage of trained personnel continued to pose a major problem. The number of people available and qualified for S/C duties did not keep pace with the ever-increasing requirements for communications support. There was an excessive increase in the workload of the S/C during the Cuban Missile Crisis, and there was an acute shortage of operating type personnel. In November 1962 the Chief, S/C, presented to the Chief, Administration Staff, OC, a request for recruitment of a contingency force of code clerks. 20/* He was hopeful that this might help alleviate the chronic personnel shortage in the S/C.

25X1

[redacted] relates an incident in 1963 when 38 potential candidates were secured from other divisions of the Agency. Their interest and enthusiasm were overwhelming; being engaged in sensitive communications activity and the possibility of overseas assignments acted like a magnet. However, when faced with shift work,

---

* See Attachment Q

staggered work weeks, cramped quarters, far-from-ideal working conditions, and general pressure, enthusiasm waned and interest flagged noticeably. Only four remained! The best source of recruits with "stickability" has always been word of mouth solicitation. 21/

Requests for changes of personnel ceilings had to be justified by demonstrable needs based upon specific increases or reallocations in work-loads. Notwithstanding reiterated requests during this period, only small net increases were granted. These were never adequate to cope with continually increasing demands. There were many pressing contingencies requiring rapid action incapable of accomplishment without the assignment of additional personnel, vital to the implementation of existing programs. These alone provided ample justification for such a measure, aside from easily foreseen requirements for other projected plans. The S/C was no longer able to meet its commitments with the personnel available, and in March 1963 the Chief, Signal Center, submitted to the Director of Communications a request for an increase in

the S/C personnel ceiling. 22/*

An indication of the personnel shortages may be seen in the graph on the average employment for the S/C during the expansion years.** Despite the handicap imposed by shortages of personnel the work progressed. The Headquarters Signal Center personnel were obligated to keep abreast of each new change in equipment and procedure and to develop the necessary expertise in the operational techniques demanded of them. It is to their credit that they have demonstrated unabated zeal and competence in mastering every innovation, thereby maintaining the long-established tradition of providing the Agency with the most efficient communications service to be found in the United States Government - a universal communications organization probably second to none in the world.

---

* See Attachment R

** See Figure 7, p. 81

Next 3 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

IV. Operations - 1951-66

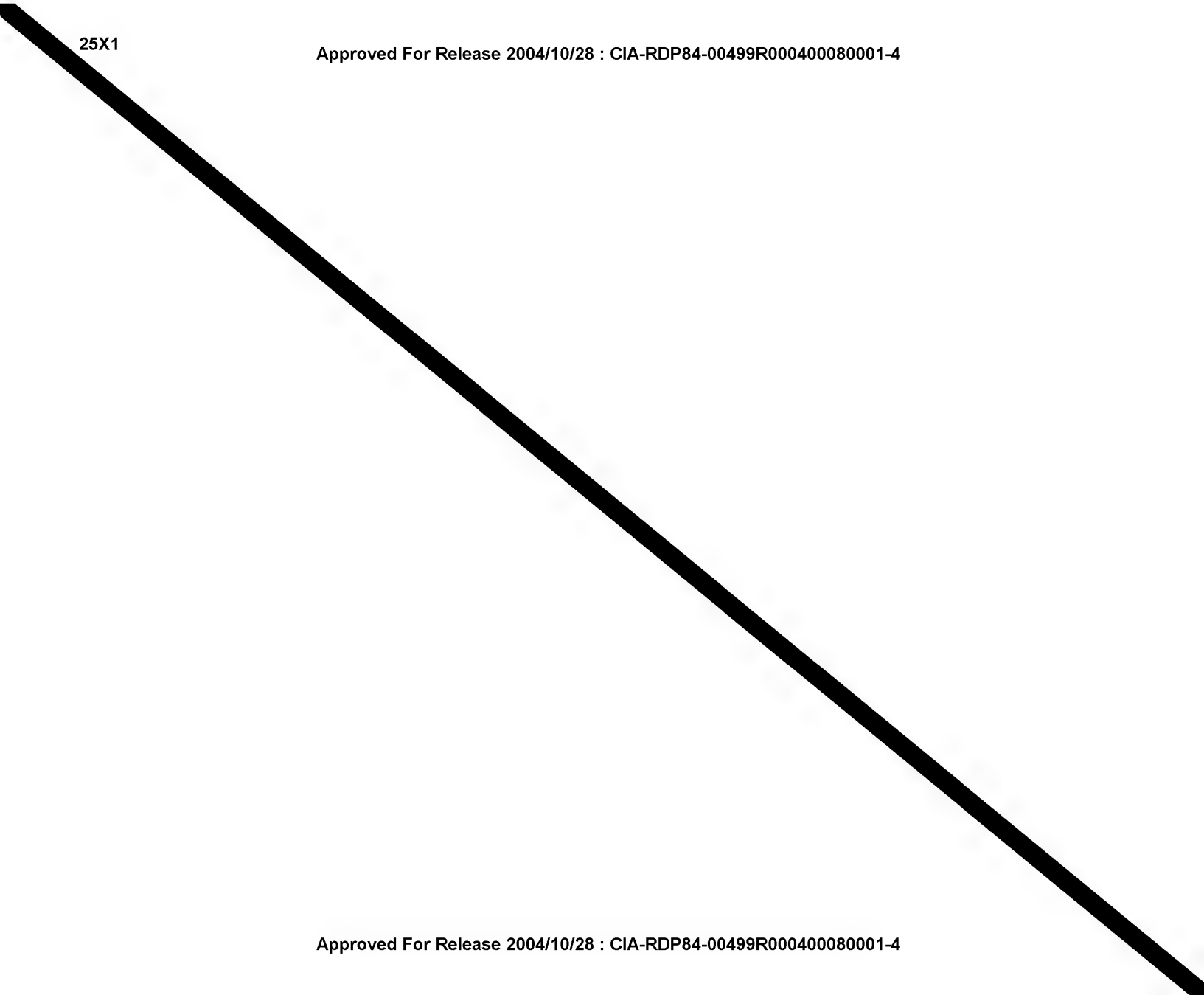
A. Equipment, Procedures, Circuitry

1. The Early Period - 1951-58

During this period there were many noteworthy changes in cryptographic and terminal equipment techniques. The one-time systems (pad and tape) were the mainstay of secure communications. The strip cipher system, CSP-1700 (rotor), SIGABA and associated systems (rotor), and Hagelin Machines were all phased out by the mid-1950's. The AFSAM-7, later changed to KL-7 (rotors), was used during this period with a number of stations but not to the extent that OTP and OTT (TINYTOT) were employed. The M-19 family of teletype equipment served as the primary terminal equipments. On-line cryptographic systems during the early period consisted of [redacted] (rotor), [redacted] (tape), ASAM (rotor), and AFSAM (rotor).* 25X1 25X1

The Headquarters Signal Center in "L" Building mushroomed in terms of space, personnel, and equipment, and developed an overall capa-

* See Figure 9, p. 83



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

bility to move huge volumes of messages securely and as rapidly as off-line technology would permit. However, space, personnel, and equipment were never sufficient during the early period.

Although the use of one-time tape and KL-7 type rotor devices steadily increased, the laborious one-time pad still maintained its lofty position as the primary system for off-line encipherments between Headquarters and the majority of field stations.

A severe blow was struck when the 131B-2 one-time tape machine (SIGTOT) was declared vulnerable. This resulted in further disruption of established operating routines and demanded immediate revision of enciphering procedures. The TINYTOT OTT machine was quickly developed to counteract this threat, and it became the primary OTT encryption/decryption device. Other standard equipment suffered the same fate with the same results as technology advanced.

A requirement was levied to establish a COMINT area (later called Special Intelligence or SI) as a separate restricted enclave within the

confines of the S/C, and it was called Special Signal Center Branch. The simultaneous mushrooming of the OCI "Q" Building Facility caused severe hardships since traffic in both facilities increased rapidly and continually, and both of these facilities required that operating personnel have special clearances. Several special projects such as

25X1

[redacted] additionally made heavy inroads on S/C personnel and equipments.

General operating steps used in the encipherment/decipherment process for OTP (including KL-7) and OTT between 1951 and 1958 are presented in charts in Attachment C.* These procedures, with the exception of changes relating to the development of the TINYTOT, remained constant. Both the OTP and OTT systems were slow and laborious. The hourly standard for enciphering OTP messages was 225 groups (literal) with approximately 1,800 groups as the daily standard. The hourly standard for enciphering OTP messages (numerical) was 100 groups as the daily standard. Some relief was obtained with

---

* See pp. 18 and 26

the issuance of multiple pad links with up to 16 station systems being employed. The hourly standard for OTT messages was 325 groups with 2,600 groups as the daily standard.* The speed with which a OTP message could be enciphered/deciphered depended largely upon the speed with which the operator was able to write legibly and the degree to which he had memorized the Vigenère Tableau.** The speed with which a OTT message could be enciphered/deciphered was dependent upon the equipment used. The M-19 (SIGTOT, later TINYTOT) was the primary device being used for OTT enciphered messages. The maximum speed of this device was 60 words per minute utilizing the 5 level Baudot Code. The hourly standards above were exceeded once personnel became thoroughly familiar with the system and performed the function repetitively day after day.

It was not uncommon for 24-72 hour backlogs to develop during peak operational or

---

* See Figure 10, p. 87

** See Figure 11, p. 88

Figure 10

BASED ON STUDY CONDUCTED CIRCA 1962

GROUPS PER MAN-HOUR

SYSTEM	ENCIPHERING	DECIPHERING
KL-7	200 - 275	400 - 440
OTP	225	150
OFF-LINE TOT	325	800
KW-26	1,800	3,000

APPROX RATIOS

KW-26 VS TOT	5:1	3.75:1
KW-26 VS OTP	8:1	20:1
KW-26 VS KL-7	9:1	7.5:1

NOTE: GROUPS PER MAN HOUR INCLUDE ALL SIGNAL CENTER PROCESSING ABOVE AVERAGES PERFORMED BY EXPERIENCED PERSONNEL ONLY. NEW PERSONNEL PROCESS MUCH LESS.

Figure 11

A	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *Z Y X W V U T S R Q P O N M L K J I H G F E D C B A*
B	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *Y X W V U T S R Q P O N M L K J I H G F E D C B A Z*
C	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *X W V U T S R Q P O N M L K J I H G F E D C B A Z Y*
D	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *W V U T S R Q P O N M L K J I H G F E D C B A Z Y X*
E	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *V U T S R Q P O N M L K J I H G F E D C B A Z Y X W*
F	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *U T S R Q P O N M L K J I H G F E D C B A Z Y X W V*
G	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *T S R Q P O N M L K J I H G F E D C B A Z Y X W V U*
H	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *S R Q P O N M L K J I H G F E D C B A Z Y X W V U T*
I	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *R Q P O N M L K J I H G F E D C B A Z Y X W V U T S*
J	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *Q P O N M L K J I H G F E D C B A Z Y X W V U T S R*
K	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *P O N M L K J I H G F E D C B A Z Y X W V U T S R Q*
L	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *O N M L K J I H G F E D C B A Z Y X W V U T S R Q P*
M	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *N M L K J I H G F E D C B A Z Y X W V U T S R Q P O*
N	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *M L K J I H G F E D C B A Z Y X W V U T S R Q P O N*
O	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *L K J I H G F E D C B A Z Y X W V U T S R Q P O N M*
P	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *K J I H G F E D C B A Z Y X W V U T S R Q P O N M L*
Q	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *J I H G F E D C B A Z Y X W V U T S R Q P O N M L K*
R	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *I H G F E D C B A Z Y X W V U T S R Q P O N M L K J*
S	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *H G F E D C B A Z Y X W V U T S R Q P O N M L K J I*
T	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *G F E D C B A Z Y X W V U T S R Q P O N M L K J I H*
U	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *F E D C B A Z Y X W V U T S R Q P O N M L K J I H G*
V	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *E D C B A Z Y X W V U T S R Q P O N M L K J I H G F*
W	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *D C B A Z Y X W V U T S R Q P O N M L K J I H G F E*
X	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *C B A Z Y X W V U T S R Q P O N M L K J I H G F E D*
Y	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *B A Z Y X W V U T S R Q P O N M L K J I H G F E D C*
Z	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z *A Z Y X W V U T S R Q P O N M L K J I H G F E D C B*

crises periods. The advent of these frequent backlogs required that personnel work excessive overtime, and OC found it difficult to hire sufficient personnel and provide the necessary rapid training required to keep pace with the already increasing workload. Backlogs were building up in all phases of the work. The most that could be expected was that delays for priority and above precedence messages would not be excessive. Over a weekend the accepted delay of a routine message was 48-72 hours, a priority 12-24 hours, and an immediate 1-12 hours. To meet even these times was dependent upon the geographic location of the station to which the message was addressed, the crypto system used, and the manner in which it was routed.

The Signal Center resembled a factory with various assembly and production line techniques employed. These production line techniques were used in most operational sections/branches. It was not uncommon for 100 or more pads to be stacked in the Manual Cryptographic Branch waiting for encipherment/decipherment and upwards of

300-400 tapes hanging in the Machine Cryptographic Branch waiting for encipherment/decipherment and transmission. Even though personnel worked unlimited overtime, the loads could not be kept current. Periodic MINIMIZE conditions helped, but many times the application was too little and too late.

To satisfy the ever-increasing need to pass more and more classified text via cable to/from the field, the Teletape System was developed in 1958 and the electrical dispatch (later changed to telepouch) in 1966. This technique, while it may have speeded delivery to the field in the early days, did little to reduce the workload in the Signal Center. Several other pouch techniques were tried. One was the "Fast Pouch" between

25X1 [redacted] and [redacted] 25X1

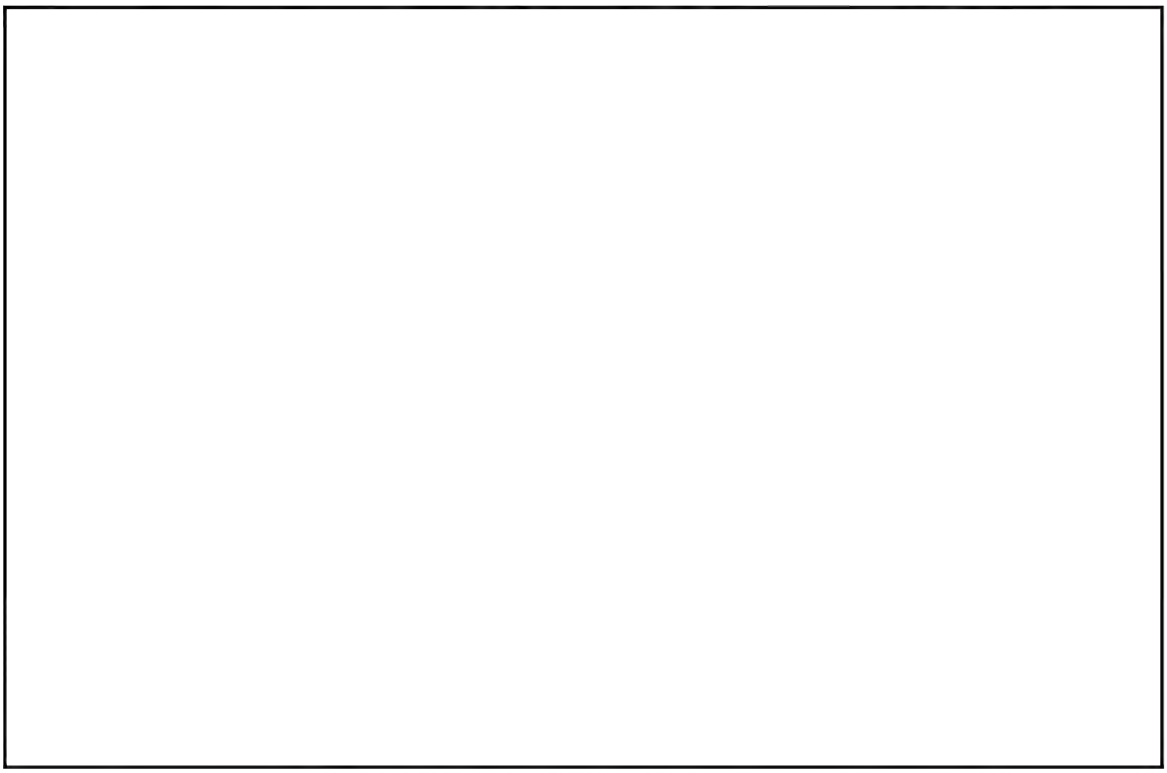
to/from selected stations. The Fast Pouch lasted only a very short period during 1955 while the

25X1 [redacted] replacing the Fast Pouch, was still in use at the end of 1966. Both procedures are described in the Cable Secretariat History.*

---

* See Part Two, Chapter IV, pp. 109, 117, 120

The Machine Cryptographic Branch employed both off-line and on-line transmission techniques.* During the period 1946-50, the transmission of the encrypted messages was usually performed by commercial telegraph companies or by



25X1

message. Cover security was the primary reason for the stringent check and double check system employed in the early years so that cryptographic or transmission security violations would not occur.

---

* See Attachment C, pp. 27, 28

In 1951 the Agency transmitted most messages directly from its Comcenter to the commercial telegraph [redacted] 25X1

25X1 [redacted] by wire lines. These transmissions were in all cases completely enciphered (scrambled) messages. No classified plain text was processed by wire/radio rooms, and/or [redacted] operating 25X1 components as far as transmission of covert Agency traffic was concerned. The only messages transmitted in clear text form by the Signal Center were over the Western Union teleprinter and consisted of plain text telegrams from/to the Agency overtly as CIA.

[redacted] 25X1

25X1

[redacted]

Control over messages was relinquished as soon as they were accepted by the carrier (Commercial, [redacted] CIA did NOT control its own transmission facilities, with the exception of [redacted] radio circuits which were operated out of the Agency radio station [redacted] 25X1 [redacted] As a result of this lack of control, messages were not only delayed but frequently lost, and stringent control procedures were inaugurated. However, in the early days, since CIA did NOT control the majority of its circuitry, lost and delayed messages were not uncommon. It was not until 1958 that CIA acquired its first long haul trunk circuit between "L" Building and [redacted] 25X1 This circuit was leased from RCA.*

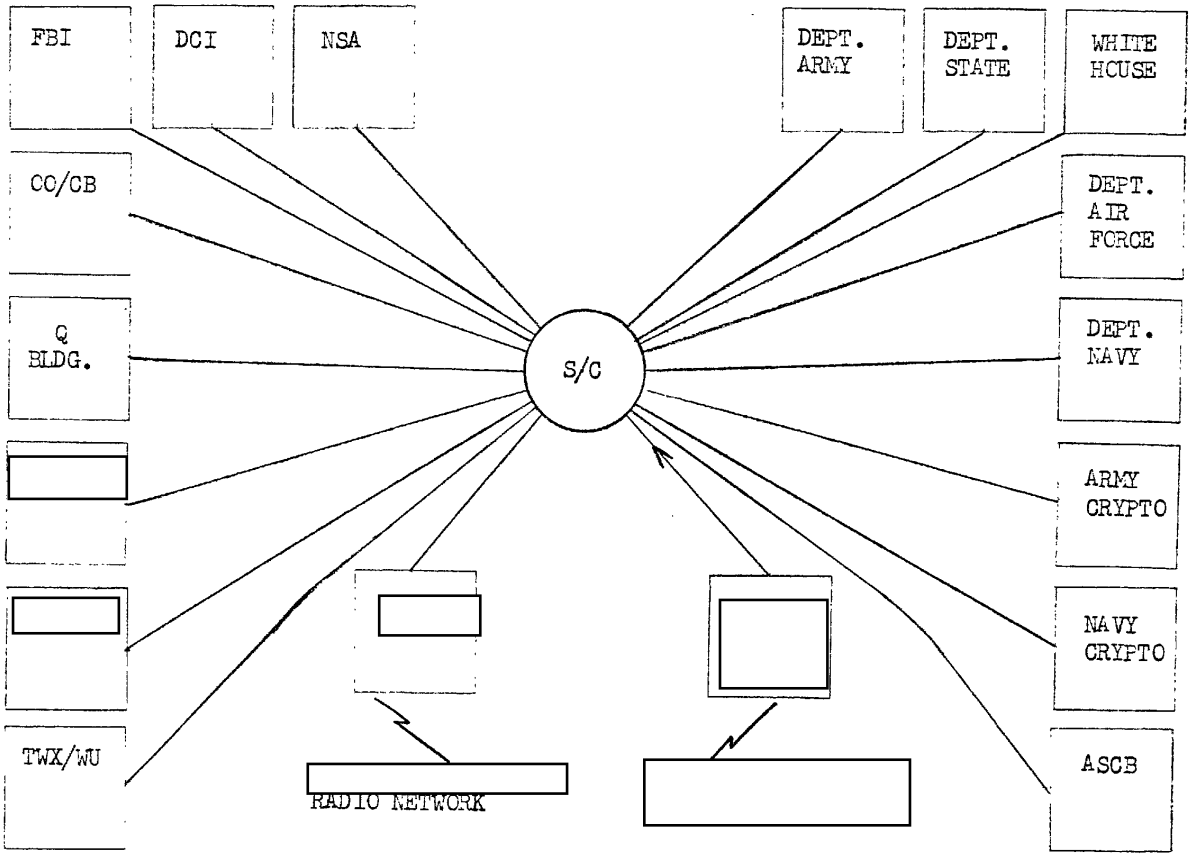
Some extremely sensitive messages, in addition to being processed on a compartmented basis (SSCB, "Q" Building, and "Special Hold Down" in "L"

---

* See Figure 12, p. 94

Figure 12

SIGNAL CENTER CIRCUITRY CIRCA 1958



25X1

25X1

25X1

25X1

Building), were first enciphered in a manual system, then re-enciphered in an OTT system, and finally transmitted. However, due to time consumed in this superencipherment, this technique was kept to a minimum, but it was used upon occasion.*

Liaison on the part of S/C personnel with [redacted] was rather limited during the early period and consisted mostly of "line" chatter dealing with receipt of messages and line conditions. From a cryptographic security standpoint, more detailed day-to-day liaison was conducted [redacted] 25X1

25X1

Several developmental systems were tried during the early period. One was the AS-4,** an experimental high-speed system between [redacted] 25X1 Briefly, the system was supposed to operate at 1,600 WPM speed in

---

* See Attachment C, p. 27

** See Attachment S

an on-line mode using the KX-3 electronic key generator (the forerunner of the KG-13). A receive terminal consisting of a high-speed Potter Printer and the KX-3 electronic key generator was installed in the Headquarters Signal Center. A KX-3 and high-speed transmitter were installed in the [redacted] 25X1

Tests were conducted periodically over a 3-year period (1958-61) between Headquarters and the [redacted] 25X1 and some live traffic was actually transmitted over this system. However, due to ionospheric disturbances, the number of frequencies required for Quantized Frequency Modulation (QFM), and the lack of dependability of the KX-3 electronic key generator and the Potter Printer, the system never progressed beyond the testing stage. It was finally abandoned.

A development which succeeded, however, was a specially "rigged" M-19 SIGTOT dubbed

---

* See Figure 12, p. 94

"the Monster." It was a one-time pad machine constructed to encipher/decipher the Vigenère Tableau. In 1961 the Office of Communications, Research and Development (OC/RD) was tasked with developing a new monster utilizing the new M-28 teletype equipment as a base. Subsequently, the machine was designated the HL-6 and has since become standard equipment for one-time pad operations in the Signal Center. *

In 1957 a directive was received from NSA that all local circuitry must be equipped with encryption equipment. Consequently, KW-9's were installed on several links. These devices were most cumbersome to operate. Luckily, the KW-26 was developed which provided both link encryption and traffic flow security.

Generally speaking, the above modus operandi was in effect until late 1958 when the first overseas trunk was activated ("L" Building -

25X1

[redacted] and the KW-26 appeared on the scene. Field stations supported increased from

---

* See Attachment T

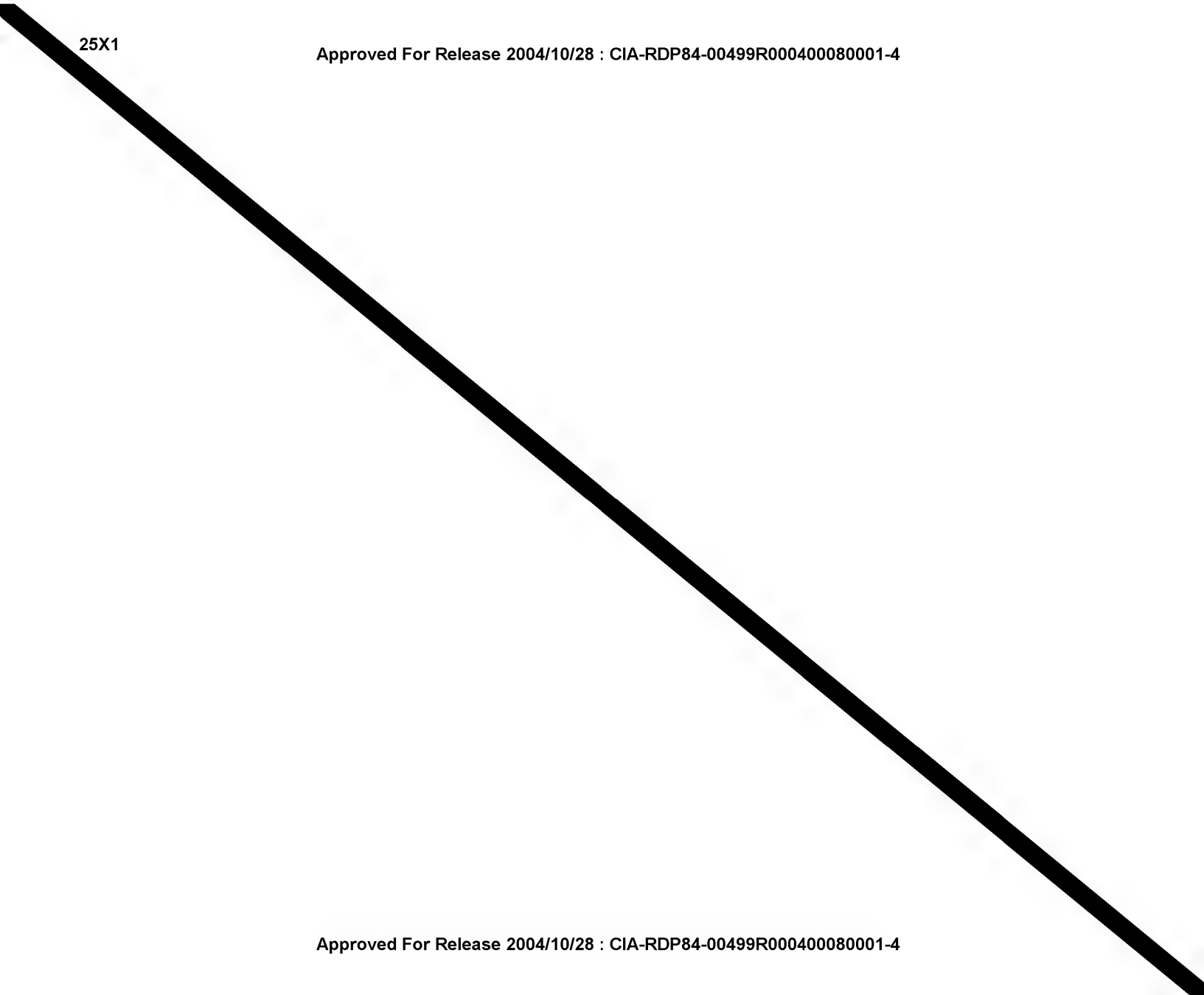
108 in 1951 to 155 in 1958. *

2. The Beginning of the Communications Revolution

In 1958 the first step in what can be considered the beginning of the Communications Revolution occurred with the development and introduction of the KW-26 electronic key generator. With the advent of the KW-26, the encryption/decryption function was, for all intents and purposes, the first step towards automation since the transmitter and receiver could be operated synchronously through the use of identical key codes over dedicated (CIA controlled) cable and radio circuitry for both short and long distances, the distance limitation governed by the quality of the transmission media used. Thus, a new era in secure communications technology was inaugurated.

Between 1958 and 1963 the classified manual torn tape relay center "sprang up" around the world utilizing Military ACP-127 (Allied Communications Procedures), COI-101 (Criticomm Operating

* See Figure 13, p. 99



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

25X1

Instructions), and [redacted] (modified CIA routing doctrines). * The transmission/reception function required that personnel become familiar with the vagaries of the various transmission media in use, e.g., commercial wire lines, cables, commercial radio circuits, and Agency operated H.F. systems. Signal Center personnel had to be extremely aware of security ramifications involved in the direct contact now required with various cover organizations during the performance of technical control functions while "marrying" the KW-26 with the transmission media used.

The KW-26 quickly became the mainstay of the newborn Agency world-wide network, designated AXANET. Direct circuits, equipped with the KW-26, were activated between the Signal Center, Washington area stations, and the field. The first local circuit was activated in 1958 between "Q" Building and "L" Building. The first long distance circuit used for live traffic was activated between the "L" Building Signal Center and [redacted] in

25X1

* Current editions available in the Signal Center

April 1959 at an operating speed of 60 WPM, and the first lateral field circuits activated were

25X1 [redacted] shortly thereafter. Thus, AXANET was born. By the end of 1961 a world-wide network was in operation. Major trunks activated between Headquarters and the field during this period were:

25X1

Signal Center - [redacted] (Gateway to Central Europe)

Signal Center - (Gateway to the Far East)

Signal Center - (Gateway to Eastern Europe & Middle East)

Signal Center - (Gateway to Western Europe)

The Headquarters Signal Center was designated as the Primary Relay for the network. Major Relays were activated at major Commo installations around the world and acted as feeders to Headquarters and through Headquarters to other field areas.

The advent of the KW-26 and the introduction of a classified torn tape relay changed operational procedures considerably in the Headquarters S/C. A document for the process-

ing of traffic over the network was promulgated and was designated [redacted] The Signal Center Staffs wrote the original version of this routing doctrine, and by testing procedures through a coordinated effort with [redacted] all "bugs" were finally expunged and the procedures were refined for smooth, efficient operation. KW-26 operating procedural documents were also initially written by the S/C Staffs.

25X1

25X1

Processing times for message exchanges with the field changed drastically. Whereas, previously, it took many hours and sometimes days to exchange a message between OTP and OTT equipped stations, it now required only an hour or two, and only minutes for short high precedence messages. For instance, average length high precedence messages (200 words or less) were exchanged between Headquarters and Europe on a test basis in less than 15 minutes, unheard of before the advent of the KW-26. This included the preparation of the message for encryption, the encryption/transmission/reception and turn around in the field back to Headquarters. Dis-

tance no longer mattered since it took the same time to transmit a message to Europe as it did to the Far East since the circuitry involved was dedicated (CIA controlled) to the Agency on a full-time basis and was therefore available 24 hours daily. Initially KW-26 circuits were operated at 60 WPM since overseas telephone company relays could not cope with the 100 WPM speed desired and the limitation of M-19 terminal equipment. However, by the early 1960's most of the circuits were in operation at 100 WPM, and the M-28 teletype terminal equipment became the standard for the Agency. Strict security regulations were rigidly maintained since dedicated leased circuitry

25X1

Terminal and Relay processing times changed drastically in the Headquarters Signal Center. The following ratios of KW-26 versus the old cryptographic systems were developed *:

* See Figure 10, p. 87

	Enciphering	Deciphering
KW-26 vs OTT	5:1	3.75:1
KW-26 vs OTP	8:1	20:1
KW-26 vs KL-7	9:1	7.5:1

The above comparison includes all S/C processing from start to finish. In spite of the gain in processing times, the need for personnel continued to increase since most of the functions previously performed in OTT and OTP systems were replaced with new operating functions necessary for the operation of a torn tape relay center and necessary for the operation of a technical control center for the KW-26. The same number of personnel, however, were now able to process, for the most part, the continued increase of message volumes with less numbers of additional personnel which would have been required to process manual systems. Backlogs of routine traffic were finally reduced to 12-24 hours on weekends.

After the designation of the S/C as an "all source" communications center in 1960, the special clearance problem was alleviated since all

personnel were cleared to process SI traffic.

Not all stations were equipped with the KW-26. Where the volume of traffic was too low, or the strict security standards in force for the installation of the KW-26 were not adequate, the OTP and OTT crypto systems remained as the primary cryptographic systems.

Poking of messages remained the most time-consuming operation with the advent of the KW-26. A study conducted in 1963 showed that the average operator in one 8-hour day could prepare for transmission approximately 40 messages of 160 groups average length or a total of 6,400 groups. *

An attempt was made to automate the poking of messages through the use of a Farrington Scanner. However, due to a lack of capability for easily correcting typographical errors, recognizing pen and ink changes to cables, and the sensitivity of the scanner to smudges, creases, and other marks on the message the Farrington Scanner was abandoned since it was not a practical device for the S/C at

---

* See Attachment U

that time. *

In March 1963 the network appeared as depicted in Figure 14. ** Field stations supported increased from [redacted] in 1958 to [redacted] in 1963. *** 25X1 25X1

3. The Dawning of the Computer Age

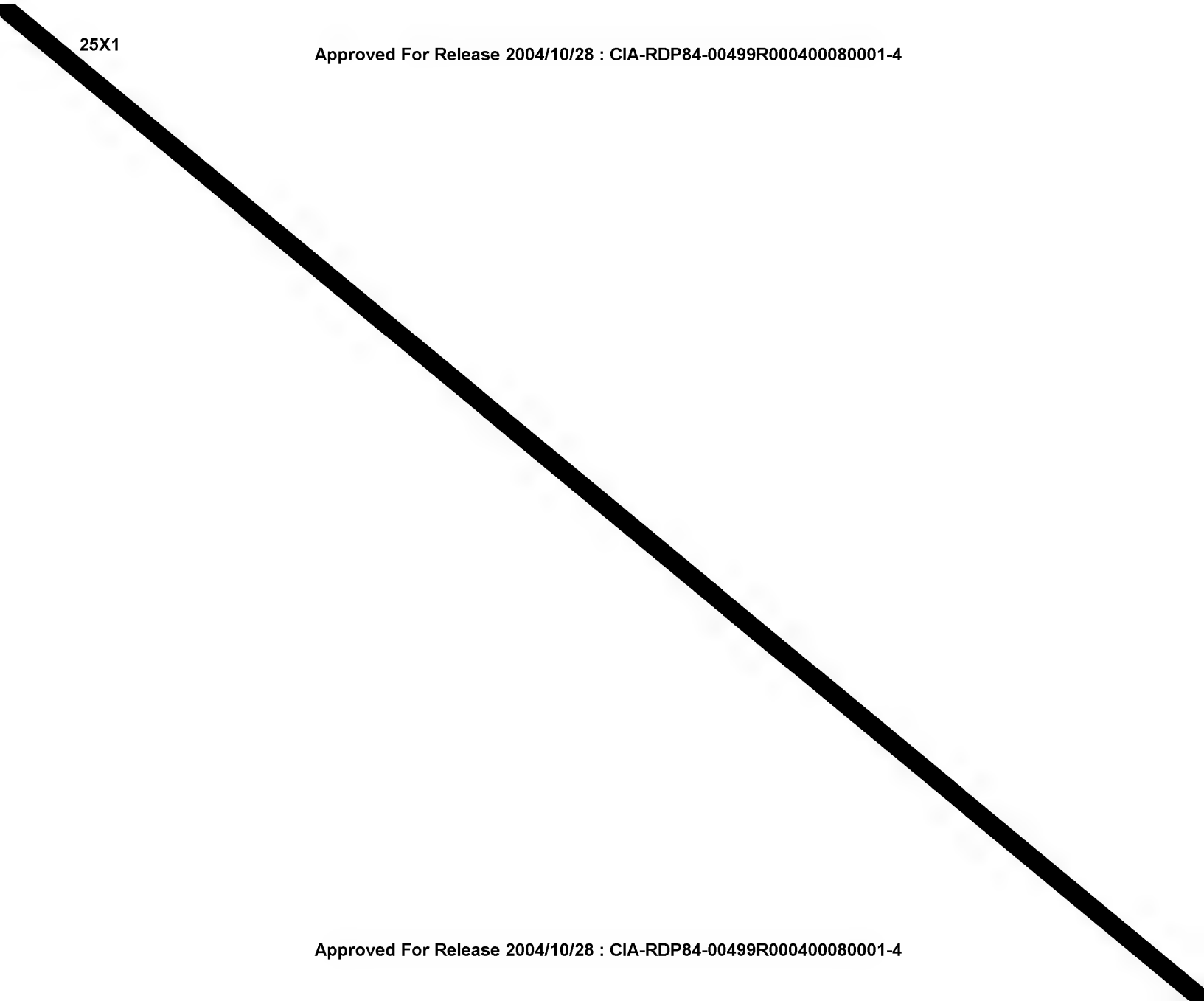
New technology had only started to scratch the surface. With the advent of the space age and its demand for "instantaneous" intelligence it became evident that sooner or later even the increased speed of the KW-26 would be inadequate and the adoption of additional new techniques would be necessary to keep pace with the technological explosion that was taking place. One of the first steps was to automate, through the use of computers, the torn tape relay center. The first automated switching system (MAX-I) **** came into being in March 1965 at CIA's [redacted] The 25X1

* See Attachment V

** See p. 107

*** See Figure 13, p. 99

**** See Attachment W



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

Headquarters Signal Center, along with other Major Relay Centers and Tributary Stations which terminated in MAX-I, had to modify their routing procedures by the use of the new document promulgated for routing traffic through automated switching systems [redacted] 25X1

The computer, which had already become an integral part of the overall technological explosion of the late 1950's/early 1960's, and its use in the data processing field had started to move ahead very rapidly by the mid-1960's. The technology involving missile systems and space were only in their embryo stages. In order to assure adequate information of developments in this field on the part of hostile countries, the volume of "instantaneous" intelligence would be increased, and the secure transmission of information from its source to the consumer had to be considerably improved. Advance computer data processing techniques demanded "direct" high-speed access in the real time processing of intelligence information. This required that the use of the newer form of communications, referred to as data

communications, be adopted more widely and frequently by the United States Government. The transmission of data at high speeds required the development of a new series of electronic key generators able to simultaneously encrypt/decrypt and transmit/receive over wide band circuits intelligence at speeds equivalent to thousands of words per minute instead of 60 WPM as had been the standard for several decades for regular cable processing. Although no live circuitry was installed in the Headquarters Signal Center by the end of 1966, plans had been completed for the activation of the first of these circuits early in 1967.

The Signal Center received its first KG-13 electronic key generators for use on the WASHFAX system, a high-speed facsimile system whereby pages were enciphered/transmitted and at speeds of 6 pages per minute. * Using this LDX system, the material did not have to be converted to machine language prior to encryption. The page

---

* See Attachment X

was merely placed on a Xerox scanner which digitized the signal and transmitted the page, after encryption by the KG-13, to a distant Xerox page printer which received the message in page form. The system was activated in 1965 between the CIA Operations Center, Department of State, National Military Command Center at the Pentagon, and the White House. The system proved itself extremely useful in the rapid exchange of information between CIA and the White House during crises periods.

Additional KG-13 equipment was received for use on the first CIA overseas secure voice link

25X1

[redacted] The equipment consisted of a HY-2 vocoder, KG-13, and associated ancilliary equipment. Through the use of Military (AUTOVON) long distance telephone cables/circuitry, the system was moderately used between Langley and our representatives

25X1

[redacted] The system was shared with the Department of State and the Department of Defense. While the quality of the service was not good, it nevertheless served as a prototype of secure voice systems to come.

The responsibilities of the Special Assistant for Plans and Automation assigned to the S/C included the preparation of plans for the installation of new equipments to the S/C such as MAX-II and secure voice. The Special Assistant for Engineering coordinated the planning with OC/E. Thus, the stage was set for what will probably become the most dynamic and exciting decade in the history of secure communications. Of some [ ] stations supported at the end of 1966, [ ] were equipped with KW-26, [ ] with the KW-7, [ ] with the HW-19A, [ ] with OTT, and [ ] with OTP. The KW-7 was not in use in the Headquarters S/C during this period. Circuitry in use at the end of 1966 is depicted in Figure 15. *

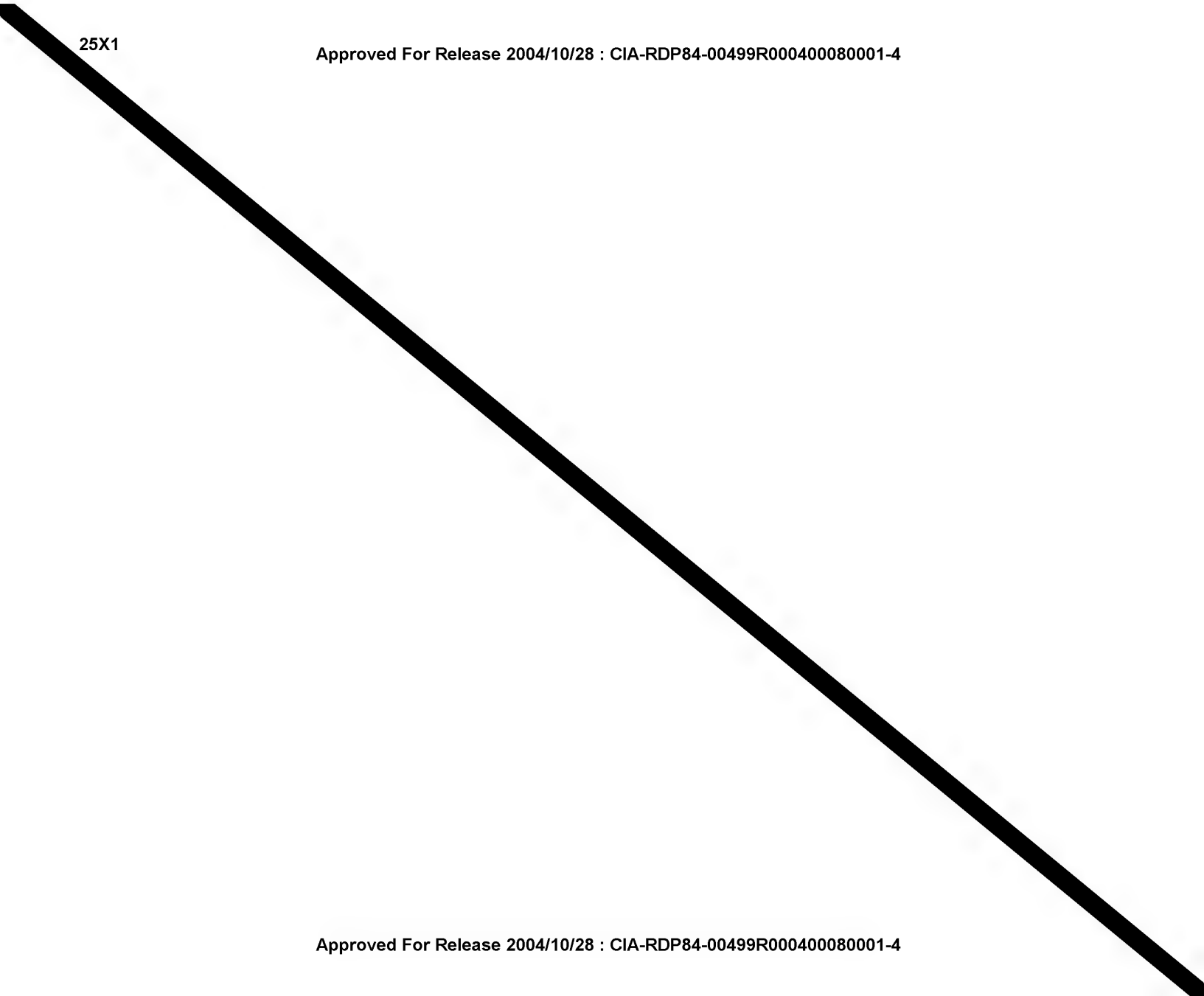
25X1 25X1 25X1 25X1 25X1 25X1

B. Message Volumes and Field Stations Supported

Message volumes increased steadily during the Expansion Period. From 1951 through 1962 message volumes were measured in terms of groups (five alphabetical letters equalled one

---

* See p. 112



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

code group) to match the OTP system, and later they were measured in terms of words (an average of ten words equalled one line of typewritten text) to match the OTT and on-line systems. During the 1951-62 period the group/word count volumes increased over 1,000 %. * These increases were due to several factors, e.g., the increases in capacity of the crypto systems (OTP to OTT to the KW-26 on-line system) and the increased number of stations supported. Field stations supported increased from [redacted] in 1951 to [redacted] in 1966. ** 25X1 25X1

With the advent of the KW-26 and the processing of Other Agency traffic by the CIA network, it became necessary to change the accounting system to satisfy the increasing demand for new types of management statistics, and to reduce the amount of time spent in collecting statistics. In January 1963 [redacted] was issued, and it discontinued group/word counts and used the individual message as its primary measurement for statistical 25X1

---

* See Figure 16, pp. 114-116

** See Figure 13, p. 99

Next 2 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

purposes.

The statistical breakout of messages also became more detailed since management wanted to distinguish between certain categories of message traffic and between relay and terminal traffic. In 1962 Staff (including Other Agency), SI, and the NSA Broadcast (formerly "Q" Building traffic) were broken out separately as originated/terminated messages. In 1964 Teletapes were added to this category of reporting, and in 1965 Restricted Handling messages were counted separately. * Additional charts and graphs depicting IN vs OUT, off-line vs on-line, relay vs terminal, and various daily and weekly breakouts according to geographical areas, etc. were maintained on a periodic basis.

A problem throughout the years has been distribution of workload of outgoing cables. A high percentage of this traffic was received between 1600-1900 hours. It was impossible to process this overload of cable traffic during the night with the limited personnel, and in many cases de-

---

* See Figure 17, pp. 118-120

Next 2 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

livery of cables to the field stations was delayed for 24 hours or more. Periodically pleas were sent to originating and releasing officers urging the filing of cables during the day. *

From 1963 to 1966 the message volume continued to increase steadily at an average rate of approximately 17%.

Frequent attempts were made to reduce cable volumes 23/**; however, with the consistent upward trend these measures were none too effective. Special reports of cable traffic volumes for January 1954 were submitted to the DCI by the Assistant Director of Communications. *** If any benefits were derived, they were buried within the increase.

In 1956 a cable writing course was formulated in cooperation with the DD/P, [redacted] 25X1

25X1 [redacted] Chief, SE; OC, [redacted] 25X1

Chief, Signal Centers; and the Office of Training (OTR). High lights of the course appear in the out-

---

* See Attachment Y

** See Attachment Z

*** See Attachments AA and BB

line of the proposed agenda. * Ultimately it was scheduled by OTR three-four times a year. Structured to effect reductions in cable volumes by eliminating the writing of unnecessary cables and by reducing excessive referencing, redundancy, and verbiage, the course appeared to be successful and resulted in a marked improvement in cable writing. [redacted] was tasked to give a one-hour lecture dealing with the relationship of cable writing and communications procedures, systems, etc., and he continued to give the OC lectures during his tenure as Chief, Signal Centers. Mr. [redacted] who succeeded [redacted] delegated this responsibility to his Signal Center Officer, Mr. [redacted] Later [redacted] gave the OC portion of the lecture. In 1960 the cable writing course was integrated into the normal CIA orientation course by OTR, and Signal Center personnel no longer were required to participate.

C. Message Accountability/Message Formats

One of the most significant functions

---

* See Attachment CC

of the Signal Center was the accounting for every message sent and received. Accepting a message for delivery entailed more than just its encryption/transmission or reception/decryption. The most important factor was being able to guarantee its delivery. The CIA network, after its establishment in 1959-62, lost less messages than any other large United States Government communications system. This was accomplished not only by dedicated professionalism within the ranks of its personnel but by the adoption of procedures which afforded more than a 99.99% confidence factor as far as delivery was concerned. Achieving such a confidence factor was not possible during the early years, 1951-58, since the majority of traffic was transmitted over State or Military circuitry. However, the procedures adopted after AXANET was established made this achievement possible. The most important ingredients in achieving such a high percentage were a high quality network, the use of a check number series, and good servicing procedures.

The check number was the single most

important number assigned to a CIA message. Various other numbers were also assigned to messages. * To make certain that all cables sent to a specific station were received at that station, a check number was assigned to each message from a consecutive numbering series maintained between the two stations. Whenever a number was open, an encrypted service was sent requesting retransmission of the missing check number.

There were some stations where relatively few messages were exchanged. Eventually a missing check number would show that a message was missing but obviously not until a subsequent message had been transmitted. Field stations were divided into LOW VOLUME and VERY LOW VOLUME stations. For a better check on transmissions to these stations procedural instructions were disseminated by the Chief, Signal Centers, OC. ** For LOW VOLUME stations, which exchanged between 6 and 30 messages per month, a ZFF was sent on messages which were

---

* See Figure 18, pp. 125, 126

** See Attachment DD

Figure 18

Numbers Assigned to CIA Messages

IN Number	For in-station only purposes of accounting and verbal reference, a separate consecutive unclassified numbering series was assigned to incoming cables regardless of originator or addressee.
STATION Number	To facilitate subsequent message identification, the originating signal center assigned a number from a consecutive series of numbers to each cable regardless of destination.
OUT Number	For in-station only purposes of accounting and verbal reference, a separate consecutive unclassified numbering series was assigned to outgoing cables regardless of originator or addressee.
MESSAGE Number	To facilitate subsequent message identification, the Headquarters Signal Center assigned a message number from a consecutive series of numbers to each outgoing cable regardless of destination.
CHECK Number	To make certain that all messages sent to a specific station were received at that station, a check number was assigned to each message from a consecutive numbering series maintained between the two stations.
CHANNEL Number	To identify a transmission sent on a specific channel between two stations a combination of letters and figures were used to identify one or both of the stations and channel designator.

SERVICE CONTROL Number	To be used merely for reference and identification, service messages carried a control number assigned in consecutive order.
STATION SERIAL Number	To identify a message a reference number was allotted in sequence by the originating or refile station and appeared in the external message heading to be used mainly in unclassified services.
DATE-TIME Group (DTG)	To be used for reference and identification on occasion, the date-time group gives the date and time at which a message was released by the originator for transmission (expressed in six digits); the first pair of digits denoted the date, the second pair the hour, and the third pair the minutes (061601Z). The DTG was also used in tracer actions if other portions of the heading were obliterated. The Navy uses the DTG for reference purposes.

PRIORITY or above, and also on any message in which a time element was indicated. For VERY LOW VOLUME stations, which had 5 or less messages per month, it was mandatory that a ZFF was sent on every message. *

Service messages were brief, concise messages used by operating or supervisory personnel at Signal Centers or relay stations to exchange information and instructions pertaining to any phase of traffic handling, status of communication facilities, circuit conditions, or other matters affecting communication operations, e.g., circuit continuity checks, correction of errors, tracer action, etc. Service procedures varied according to the type of information needed. Service messages, assigned sequential reference numbers, pertained to the encipherment, decipherment, or handling of a specific cable and were used as a means of expediting the handling of cable traffic and of assuring the delivery of an accurate plain text copy to the addressee. **

---

* See Attachments EE and FF

** See Figure 19, pp. 128-135

Figure 19

Types of Service Messages *

a. Request for rerun of staff message received garbled.

b. Request for rerun of Telepouch message received garbled.

c. ZDF - Advising originating station the time of receipt of high precedence message or answer to any ZFF request.

d. Classified service message, requesting portion of text received garbled.

e. Advising station that HQS S/C was missing message assigned a quoted check number and requesting subject message be retransmitted.

f. Continuity Check service message to a low volume station.

g. Tracer service - to determine reason for non-delivery or delay in transmission.

* See samples attached

Figure 19 a

PP RUESBE
DE RUEIQCS #0450-C 110 1302
ZNR UUUUU
BT
UNCLAS SVC RUESBE 0114 110/214 ZES2
BT #0450
NNNN

Figure 19 b

TELEPOUCH RETRANSMISSION REQUEST

PP RUMJFS

DE RUEIQCS #0460 1101612

ZNR UUUUU

BT

UNCLAS SVC RUMJFS 264T 1100846 R 200815ZES2 TO RUEITP
(DE LINE) (DTG)

BT

NNNN

Figure 19 c

ZDF FORMS

PP RUESPS

DE RUEIQCS #0455-C 1101505

ZNR UUUUU

BT

UNCLAS SVC ZUI RUESPS 1168 1101445 ZDF 201502

BT

#0455

NNNN

SECRET
(When Filled In)

Figure 19 d

CASE NUMBER	
0472	-C

IN NUMBER	
1	292347
2	
3	

SERVICE MESSAGE

S E C R E T CITE WASHINGTON

25X1 PRIORITY [ ]

SERVICE

25X1 REF [ ] 17812 PARA 5G

SEND FROM "COST REDUCTIONS EFFECT" TO "PROVIDE SAVINGS IN"

COMMENTS:

RELAY TO:

1
2
3

ANSWER REQUIRED: YES NO

ORIGINATED BY (Initials)

FORM 1862 USE PREVIOUS EDITION

SECRET

(44

Figure 19 e

CASE NR. 0400 C

SECRET CITE WASHINGTON

25X1

PRIORITY [redacted]

SERVICE

MISSING CKNR(S) 210 . ADVISE OR

PILOT AS ZFG AND RESEND.

SECRET

ST

#0400

NOTE: BEFORE SENDING A "MISSING CKNR" SERVICE, AN EFFORT SHOULD BE MADE TO DETERMINE IF THE MESSAGE/T.P./ DATATEL WAS RECEIVED AND NOT LOGGED. THIS CAN BE DONE BY:

1. DETERMINE POSSIBLE OPEN MESSAGE NUMBER(S) AND LIST ON 'MISSING CKNR' FORM. PASS TO CABLE SEC ON YELLOW FORM LOCATED IN SERVICE DESK DRAWER.
2. CHECK T.P. FILES (IF APPLICABLE).
3. CHECK DATATEL FILE (IF APPLICABLE).
4. CHECK SERVICE LOG.
5. CHECK 'RELAY' CARD FOR POSSIBLE 'CRO'.
6. CHECK TO SEE IF MESSAGE WAS CRYPTO RELAYED BY RELAY STATION, BUT LOGGED ON FIELD STATION CKNR CARD.

Figure 19 f

LOW VOLUME CONTINUITY CHECK SERVICE

0422 C

FP RUESDA

DE RUEIOCS # 0422 C 1101333

ZNY XXXXX

P 201330 Z ZFF4

BT

XXXXX

S E C R E T CITE WASHINGTON

25X1

PRIORITY

SERVICE

CONTINUITY CHECK. LAST CHECK NUMBER RECEIVED WAS 827.

S E C R E T

BT
#0422

NNNN

Figure 19 g

TRACER HQS ORIGINATED MESSAGE

PP RUMJCS

DE RUEIQCS 0004 T 0870001

ZNR UUUUU

BT

UNCLAS SVC TRACER RUMJIR CLAIMS NON-DLVY RUEIQC 0400c 0812350 R222230?

ZDQ RUEIQ AS EIA0140. TRACE TO DESTINATION AND ADVISE. STA ACCEPTING RESPONSIBILITY FOR NON-DLVY GIVE REASON FOR MISHANDLING, CITE RUEIQCS 0004 T ON ALL TRACES

THIS MSG

BT

NNNN

In some cases servicing was accomplished through use of the allied military Z code. A sample of frequently used Z signals, operating signals authorized for use between allied military stations and civil stations, were:

ZDF Message ... was received by ... at ... Z

ZDG Accuracy of following message or message ... is doubtful. Correction or confirmation will be forthcoming.

ZDH Request corrected copy of message ... be forwarded to ...

ZDK Question: Will you repeat message? Answer: Following repetition of ... is made in accordance with your request.

ZEL Question: Is message ... a correction to message ... which was previously transmitted with doubtful or missing groups (words)? Answer: This message is a correction (to message ...) (transmitted by ...) Note: May only be used in conjunction with ZDG.

ZES Your message ... has been received ... (1. Incomplete; 2. Garbled). Request retransmission.

ZFF Inform me when message ... has been received by ...

ZFG This message is an exact duplicate of a message previously transmitted.

Encrypted services were sent when it was necessary to request reencipherment of the entire

text or a portion of the text of a specific cable. Requests were also sent for missing check numbers, clarification of duplicate check numbers or message numbers, garbled portions, clarification of names, places, etc.

25X1

[redacted] states that

> Service wires are used by communication center personnel to exchange information and instruction pertaining to traffic handling and network operation, e.g., channel checks, rerun requests, etc. The term "Service Wire" is used to distinguish such messages from service messages.

There have been a very few messages lost over the years. Whenever such an incident occurred, an immediate investigation was launched to determine the reason and to initiate procedures to prevent a recurrence. *

Tracer action was required on messages which were delayed excessively or apparently lost. The communications center serving the message originator initiated tracer action on delayed messages. That station carefully examined records and the message heading to determine whether the

---

* See Figure 20, p. 138

Figure 20

TRACER HQS ORIGINATED MESSAGE

PP _____

DE RUEIQCS _____T _____

ZNR UUUUU

BT

UNCLAS SVC TRACER _____ CLAIMS NON-DLVY RUEIQC _____ _____ _____ Z.

ZDQ RUEI AS _____. TRACE TO DESTINATION AND ADVISE. STA ACCEPTING RESPONSIBILITY FOR NON-DLVY GIVE REASON FOR MISHANDLING, CITE RUEIQCS _____T ON ALL TRACES THIS MSG

BT

NNNN

cause of delay could be ascertained and adequately explained prior to commencing tracer action. Cognizance was taken of any adverse circuit or traffic conditions previously known or reported by intermediate relay stations which might have caused delay. Format line pilots and the elapsed time between the date-time group and filing time were checked for any indications of possible cause of delay. If the cause of delay could not be locally established, delay tracer action was normally initiated by routine message.

Upon receipt of an excessive delay tracer, each station examined its records for time of transmission of the message being traced. This information was compiled and transmitted to the next station in the relay path and to the station which originated the tracer. If any station(s) which handled the traced message caused delay, the reason for the delay and the corrective action was stated in the report. Delay tracer actions were discontinued as soon as station-to-station reporting had accounted for the excessive delay claimed.

The communications center serving the message originator also initiated tracer action on a message apparently lost. Upon receipt of a tracer request which clearly indicated non-receipt of a message, the originating communications center retransmitted the message as a duplicate unless the originator preferred to cancel it. If a duplicate transmission was made, it was transmitted as a ZFG.

If the originator suspected, but was not certain, that a message had been lost, a duplicate transmission was made if the message was IMMEDIATE or higher. In addition, a service message normally of equal precedence to the message believed to have been lost was transmitted to the addressee station, properly identifying the particular message, requesting verification of receipt or nonreceipt. When the addressee station advised that the message had not been received, tracer action was initiated. If the message believed to have been lost was PRIORITY or ROUTINE, neither duplicate transmission nor tracer action was initiated until it had been

verified by service action that the original transmission had not been received.

The communications center serving the originator, upon receiving verification of non-receipt, then transmitted a service message tracer to the first relay station involved with the original transmission. The latter station, after determining that mishandling had not been involved, then transmitted the tracer to the next relay station for action and to the originating station for information. Such action was continued on a station-to-station basis until the cause for the lost message had been determined and reported to the originating station.

Attempts have been made to eliminate check numbers since they do add to the workload. Check numbers were sometimes eliminated on book messages and AXANET service messages. *

However, it was deemed advisable to retain the check number as a permanent entity of the CIA communications network.

---

* See Attachment GG

Message formats changed periodically between 1951 and 1966. All cables transmitted/received were recorded on microfilm and became a permanent entity of the CIA Archives. It would be too voluminous to include samples of all the various formats used through the years; therefore only a sample of incoming and outgoing message formats existing in 1966 is included. *

All CIA communications procedures and message handling practices are in accordance with the following documents ** :

ACP 127 - Communications Instructions - Tape Relay Procedures as amended by [redacted] - Communications Instructions for Use within AXANET 25X1

ACP 128 - Automatic Digital Network (Autodin) Procedures

COI 101 - Criticomm Operating Procedures

D. Cable Dissemination Procedures

1. Distribution of Cables

In August 1952 the Signal Center Processing Branch became known as the Cable Sec-

* See Attachment HH

** Current editions on file in Signal Center

retariat and was placed on the CIA organizational chart under the Executive Assistant to the Director.

25X1 [redacted] was designated the Cable Secretary, and [redacted] was appointed 25X1 as his deputy.

Specific details of the transfer of responsibilities and descriptions of the distribution procedures employed by the Signal Center prior to the transfer of these responsibilities to the Cable Secretariat during the years 1951-52 are adequately described in the history of the Cable Secretariat. *

The transfer of the distribution responsibilities of staff cables to the Cable Secretariat was quickly offset in a few years by the increased responsibilities levied upon the S/C by the highest authorities of CIA regarding the distribution/dissemination of Special Project

25X1 (such as [redacted] COMINT, and other "Hold Down" traffic. The increase of Special Project and COMINT traffic necessitated the activation of a Special

---

* See Part One, Chapter I, p. 20 continuing

Signal Center Branch during the 1953-54 period to process this extremely sensitive traffic. All personnel assigned to this branch required special clearances above TOP SECRET and CRYPTO, and during the early years only selected personnel were granted these clearances. The SSCB in "L" Building became responsible for performing the functions identical to those which were transferred to the Cable Secretariat for normal staff traffic. In addition to the encryption/decryption and/or transmission/reception functions, SSCB personnel initially typed, edited, assigned distribution, and reproduced incoming and outgoing messages in much the same manner as the Cable Secretariat employed, but with the addition of stringent "hold down" rules. The distribution of these cables was performed in accordance with day-to-day regulatory memoranda. These memoranda were signed sometimes by the Director, CIA, and often by the Chief Project Officers. All of the memoranda governing the processing of these sensitive cables were destroyed by the S/C immediately upon being rescinded, and this procedure was rigidly followed.

As a result, no reference or other description of the peculiarities involved in the processing of this traffic can be written by the Signal Center.

Much of this traffic was not only sensitive but in many cases of the highest priority, requiring expeditious handling. Many innovations, therefore, were adopted to speed the processing to the customer after receipt in the S/C. These included the delivery of advance copies. In some instances Watch Officers and Senior Supervisors delivered these "Message to Garcia" style by actually galloping down the halls of "I", "J", "K", "L", and other local buildings at all hours of the day and night. Later, delivery of the hard copy (teletype copy as received) eliminated retyping the message. Corrections and annotations were usually made in pencil on the hard copy. Needless to say, these had to be legible and accurate.

In 1958 the S/C was given the additional responsibility of operating the "Q" Building Signal Center. In order to expedite the processing of certain categories of traffic received from NSA and other high level Government offices,

and to compartment this traffic as much as possible, restricting it to properly cleared personnel in "Q" Building, a "Q" Building Annex was established in the late 1940's. The responsibility for the operation of "Q" Building was assumed by OC in 1958 and was the final takeover by OC for the responsibility for processing SI and other "hold down" messages for the entire Agency.

The manual distribution procedures employed by SSCB and "Q" Building, even with the streamlined processes described above, were still not fast enough. Therefore, yet another method was inaugurated, the electrical delivery of the message directly to the consumer's office, thereby eliminating the many "Message to Garcia" courier runs for high precedence traffic as well as the time-consuming courier runs for routine traffic. Thus, out of sheer necessity, the electrical delivery technique was born. The advent of electrical delivery, later called electrical dissemination, for the processing of SI traffic did not entirely eliminate manual distribution procedures,

but was used only where technically feasible from a security standpoint, since a special new shielded cable was required to connect the S/C with the consumer's office. The electrical dissemination techniques lent themselves to SI material because of the limited distribution this type of material received by the S/C combined with the requirement for extremely fast service applicable to the 60-70% of the total special traffic load. On the staff side, in the Cable Secretariat, the requirements differed, particularly in the area of the number of action and info distribution requirements levied upon the Cable Secretariat. The latter did not lend itself to electrical delivery.

The manual distribution techniques employed by both SSCB and "Q" Building remained much the same until the move to the new CIA Headquarters Building in 1961 and 1962, most of it consisting of hand-to-hand courier delivery either by the members of the Comcenters or by personnel attached to the consumers' offices. After the move to the new building, a special window was designed where traffic could be picked

up and/or delivered directly to the Special Activities Facility (SAF). Additionally, in 1965 a tube system was installed between SAF and the OCI-CIA Operations Center.

2. Electrical Disseminations

The first electrical dissemination circuits were installed between the "Q" Building Signal Center and the CIA Watch and OCI Dissemination Offices in "Q" Building. These linkages consisted merely of a secure shielded cable installation between the "Q" Building Signal Center and the two offices mentioned. Two transmitter distributors were installed in the Comcenter, and teletype page printers in the consumers' offices where the consumers tore the copies off the printers equipped with multiple copy paper and took appropriate dissemination actions. Eventually, several secure building circuits were also installed between SSCB in "L" Building and several "L" Building offices prior to the move to the new CIA Headquarters Building at Langley. Further expansion of this technique was thwarted, however, by the impending move.

Upon arrival in the new CIA Headquarters Building electrical dissemination techniques mushroomed considerably. The old SSCB and "Q" Building centers were combined into one Special Activities Facility in the relocated S/C. Since the experimentation with the initial "Q" and "L" Buildings electrical dissemination circuits proved successful, OCI desired that this service be continued in the new Headquarters Building. This was agreed upon, and by the end of 1966 there were 10 internal electrical dissemination circuits in operation out of the Special Activities Facility. *

Two distinct operating procedures were employed. One was the tape loop whereby a hard copy and tape were received simultaneously; then the tape was placed in a loop to a transmitter which was connected to the outgoing disseminations circuit. The operator monitored the circuits constantly to make certain the message was being delivered to the proper offices and to ensure that no mechanical snags developed. A

* See Figure 21, p. 149

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

stunt box mechanism on the outgoing side of the circuit which read certain impulses on the incoming cable, selected the proper lines for transmission. This method was dubbed the "tape loop" procedure. It eliminated the necessity for tearing tape for each message and manually introducing these same tapes individually to one or several transmitters for transmission.

The other method was a torn tape distribution procedure whereby the operators affixed the proper distribution to the message manually after receipt and reintroduced the message to the proper outgoing circuits. Although time-consuming, this method was still much more rapid than normal distribution procedures where cables were reproduced and forwarded by pneumatic tube or courier service. These procedures were in effect at the end of 1966 and worked very well.

3. "Hold Down" Traffic, Restricted Handling

The forerunner of Restricted Handling was commonly called "Eyes Only," "Eyes Alone," or the "Hold Down" cable of the 1950's. After the

Cable Secretariat assumed the responsibility for distribution of normal staff traffic, it was decided by the Director, CIA, and selected DD/P elements that certain sensitive "Eyes Alone" type traffic dealing with high level United States Policy or Agency deep cover operations should not be given general distribution through normal Cable Secretariat channels but should be handled by the minimum number of personnel possible. The total processing of these messages, from receipt in the S/C to logging, enciphering, deciphering, and delivery was usually handled by one supervisor or by one Watch Officer. If an off-line crypto system was used, cipher and key tapes and work copies were all destroyed. If an on-line crypto system was used, work copies were destroyed. Delivery was usually by hand, directly to the addressee if incoming, and confirmation copy directly to the originator if outgoing. No copies of the cable were kept in the S/C. When the volume of this traffic increased to the point where it became too cumbersome for the Watch Officer and supervisors to process to completion and still be re-

sponsible for running the shop, it was determined that this traffic should be given a special designation - Restricted Handling - and that this type traffic would be handled by the minimum number of personnel possible, but not necessarily restricted to the Watch Officer or Senior Supervisor. Standard instructions were agreed upon between the DD/P and S/C in 1964 for the handling of Restricted Handling traffic, not only in the Headquarters S/C but in the field as well. These instructions were periodically reviewed and amended.

Eventually this traffic was permanently channeled into the Special Activities Facility where it could be controlled easily along with SI, Special Project, and other sensitive traffic.

4. VIP Traffic

Starting in the mid-1950's, and accelerating after AXANET had been converted to an on-line network, more and more Presidential and other high level United States Government traffic was being processed in our network. By the end of 1966 an average of 10-15 VIP cables per month were filed with CIA for protection.

During crises periods, this volume increased in scope dependent upon the length and nature of the crises in question. Naturally, this traffic was "held down" and expedited to the maximum extent possible. In several instances, the names of all personnel handling a particular cable were requested by White House officials. This traffic was handled quietly and efficiently without fanfare and once processed was forgotten. No record copies were maintained in the S/C. In 1966 procedures for the processing of VIP Traffic were reviewed and updated. *

The fact that this type of traffic was filed in AXANET for privacy reasons attested to the high degree of trust and confidence that the White House and other United States Officials had in the personnel and communications network of CIA.

5. Signal Center/Cable Secretariat Relationships, 1952-66

After the Cable Secretariat was

---

* See Attachments II and JJ

organized, the Signal Center was responsible for forwarding legible and accurate copies of staff cables to the Cable Secretariat for their distribution process. During the years that followed, 1952-66, the Signal Center and Cable Secretariat cooperated and embarked upon many joint ventures to improve the economy and the processing of the ever-increasing volume of staff traffic to the mutual benefit of both parties. Many improvements were made in the processing of Disseminations such as the installation of Pneumatic Tube System between the Facilities, the elimination of typing in the Cable Secretariat by providing copies of cables on teletype hard copies and later on NCR paper, the delivery of cables on multilith master paper eliminating a costly Xerox reproduction process in the Cable Secretariat in 1964, and the introduction of paging procedures by field stations so that messages were already paged upon arrival in the Cable Secretariat. *

Several studies were conducted during

---

* See Attachment KK

the Expansion Period which dealt with the advantages/disadvantages of recombining SC/CS again under OC. Nothing ever came of the studies. A sample of one study dated 7 February 1958 is included. *

E. Preliminary Disseminations, Teletype Disseminations

The primary mission of CIA had always been to provide finished intelligence to the President and his advisors. The prestige of CIA depended on the success in accomplishing this mission.

Contributing to the fulfillment of this mission were the thousands of intelligence reports prepared each year by the DD/P Officers in the field to keep the United States Government Agencies and Military Commands apprised of significant developments. These reports received wide local distribution and were disseminated to the highest United States Military Commands around the world and to senior United States Government Officials

---

* See Attachment LL

in Washington.

The Signal Center and Cable Secretariat cooperated to increase the speed, accuracy, and presentability of delivery of both the Preliminary Dissemination (PD) and Teletype Dissemination (TD). The various methods used are aptly covered in the history of the Cable Secretariat. * The following gives but a brief resume.

Prior to 1956 the official designation of an INTEL cable which was disseminated to the local intelligence community was a Preliminary Dissemination. Between 1951-56 most PD's were transmitted electrically and simultaneously to the local intelligence community (the Department of State; the Department of the Army for the Chief of Staff, U. S. Army for AC of SG-2; JCS SECDEF; CNO for Director of Naval Intelligence; and Director of Intelligence, U. S. Air Force), as well as receiving normal internal distribution by the Cable Secretariat. As instructed by originators these disseminations were further transmitted

---

* See Part Two, Chapter V, p. 140 continuing

to the Director, FBI, AEC, or for inter-Agency handling. This method afforded the most expeditious and efficient service for the passing of important intelligence disseminations which required top priority transmission to other U. S. Government agencies. This constituted a workload of anywhere between 500,000 and 1,500,000 groups per month for the Signal Center. Due to cumbersome processing procedures in DD/P components involved, delivery of formal C/S Information Reports which were follow-ups of PD's was delayed sometimes as much as 3-6 days.

In June 1956 the Preliminary Dissemination was abolished and replaced by the Teletype Dissemination. Processing procedures were altered, and with the advent of the TD the Cable Secretariat assumed the responsibility for reproducing and distributing copies of DD/P TD's directly to the consumer, and most PD's previously transmitted electrically by the S/C were now delivered to the local intelligence community by courier. This action resulted in much needed relief for the S/C, particularly since both the Hungarian Crisis

and Mid-East Crisis occurred in 1956, and it also increased the speed of delivery to the consumers since both internal distribution and external courier delivery was accomplished practically simultaneously during normal organizational hours.

Courier delivery was expanded between 1956-58 to the point where only TOP SECRET and IMMEDIATE TD's were electrically delivered by the S/C, thereby further reducing the S/C work-load.

During 1958-66 additional streamlining of procedures were placed in effect between the S/C and C/S. The most significant of these events was the adoption of paging procedures by the Signal Centers in the field, segregation of INTEL materi-al in the S/C thereby shunting the INTEL cable to a selected teleprinter equipped with special paper, and adoption of roll type mat multilith paper on the incoming INTEL teleprinter in the S/C. The latter not only increased the speed of processing but also decreased the workload in C/S considerably. *

---

* See Attachment MM

By the end of 1966 only approximately 10-15% of the total monthly TD volume was being electrically disseminated by the S/C, while 85-90% was delivered to the intelligence community by round-the-clock courier service. They were printed on a special form containing a letterhead which clearly presented the product as a CIA intelligence report.

F. "Q" Building Signal Center

During the 1946-47 period the first secure encrypted on-line circuit was placed in operation between the Office of Reports and Estimates (ORE), CIA, and the Department of State, using a tape crypto system. The circuit was restricted for the processing of COMINT messages between Arlington Hall (Army Security Agency) and CIA. State relayed CIA traffic. In 1948 a direct circuit with Arlington Hall replaced the State circuit. Circuits were added with the "L" Building Signal Center and DD/P - FI/D during the 1949-50 period. The "Q" Building Annex operated on an 8-hour day basis until the advent of the Korean War. After

the start of the war the facility was moved to larger quarters in "Q" Building, and the CIA Watch Officer was moved adjacent to it. The center then went on a 24-hour, 7-day week schedule. The ORE Commo Annex was transferred to OCI in January 1951.

Documentation written by [redacted] 25X1

25X1 [redacted] of OCI in 1958 stated:

> In fulfillment of its assigned responsibilities for the timely production and dissemination of current intelligence, for maintaining a 24-hour watch over incoming information for the purpose of alerting key officials to the receipt of critical and significant information and for the dissemination of incoming COMINT to all CIA components in response to approve written reading requirements, OCI relied heavily on electrical record communications.

From OCI's inception in January 1951 until September 1958, it maintained and staffed its own Signal Center. Equipment and circuitry were furnished and maintained by OC. The volume of traffic, primarily COMINT, handled by OCI Signal Center grew steadily from a monthly average of 350,000 groups in 1953 to 3,360,000 in 1958. This phenomenal increase was attributed principal-

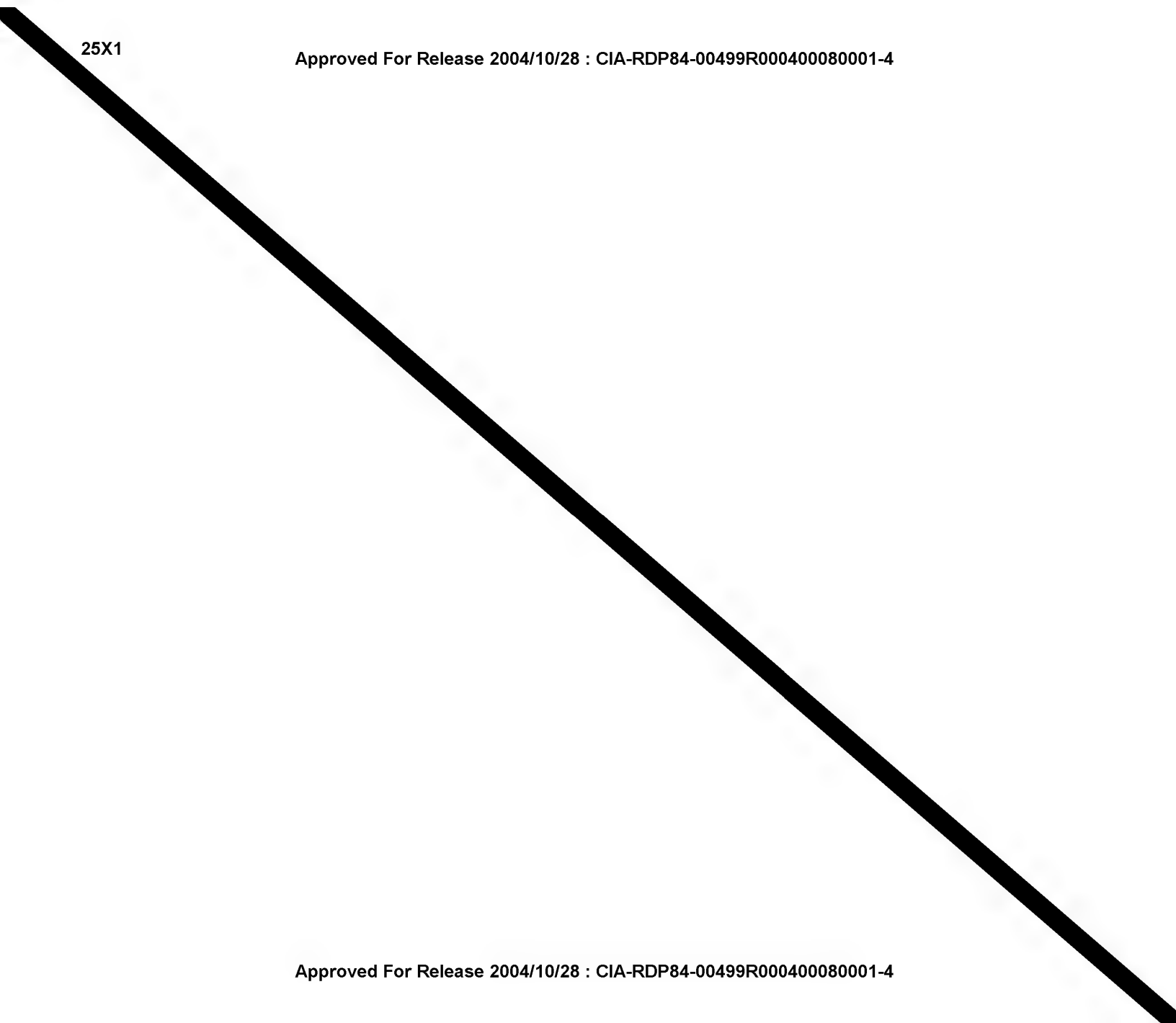
ly to the steady increase in the amount of end-product COMINT translations and reports received by CIA from all over the world via the expanded and improved COMINT communications network. *

During 1955, the authorized T/O for the "Q" Building Annex consisted of one CT/C supervisor and two CT/C operators. One of the two Watch Officers on duty in the OCI Watch Office adjacent to the Signal Center provided replacement coverage on Sundays from 0001 to 0830 and on Mondays from 0001 to 0700. Because of the ever-increasing workload volumes and addition of circuitry, OCI borrowed another CT/C in October 1956 on a full-time basis to assist in processing traffic. In January 1957 OC loaned a second CT/C for the same reason, and in March 1957 a third CT/C for a total of six personnel working in the center.

During the calendar year 1957, even with six people and OCI Watch Officer coverage from time to time, it was necessary to utilize overtime at the rate of an average of 68 hours per pay period

---

* See Figure 22, p. 163



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

in order to process the workload within the rigid time requirements and hours of coverage required by OCI.

By mid-1957 it became evident that OCI could no longer carry the communications workload with the limited manpower available. Furthermore, NSA had achieved its major breakthrough in the rapid secure processing of record communications with the development of the KW-26 electronic key generator. NSA installed the first KW-26's in its COMINT network and requested CIA to accept KW-26's in "Q" Building in order to expedite the flow of COMINT end-product to CIA. CIA accepted.

In order to provide relief for the beleaguered "Q" Building Signal Center staff, a staff study drawn up by OCI and the CIA Management Staff in January 1958 recommended that the OCI Signal Center staff and functions be transferred to OC and that OC be responsible for staffing all operational aspects of the OCI "Q" Building Center. * In July 1958 the DD/S concurred in the staff study,

---

* See Attachment NN

and the recommended transfer was effected. The OCI Signal Center thus became known as the "Q" Building Special Signal Center and was staffed with a T/O of 17 personnel.

25X1

[redacted] a Signal Center Officer on the "L" Building Signal Center staff organized the new center. This was quite a task since the Signal Center was not only enlarged but received the first KW-26's in the CIA network. The COMINT network * and "Q" Building volumes ** continued to increase during the 1958-61 period.

The "Q" Building Signal Center was responsible for the innovation of many distribution techniques designed to increase and expedite the dissemination of cables within CIA. The following are among its accomplishments:

a. First to simultaneously reproduce cables upon receipt by using multiple teletype machines for this purpose.

b. First to use multiple ply carbon and NCR paper for direct customer distri-

---

* See Figure 22, p. 163

** See Figure 16b, p. 115

bution purposes.

c. First to use electrical delivery techniques.

d. First to activate a broadcast facility, USIB Broadcast.

The broadcast facility consisted of 131B2 [redacted] half duplex broadcast circuits to consumer elements as shown in the chart, USIB Broadcast. * The broadcast was used to transmit daily CIA Intelligence Summaries on a scheduled basis and spot items at odd intervals. A switching panel associated with the system gave CIA the ability of transmitting to any or all of its USIB subscribers simultaneously from a single transmitter-distributor. Since the system provided for select multiple keying of the individual and respective crypto system for each link, individual circuit and communications integrity was not affected. **

25X1

The "Q" Building Signal Center was the first CIA facility to provide privacy communications channels for the President on his overseas

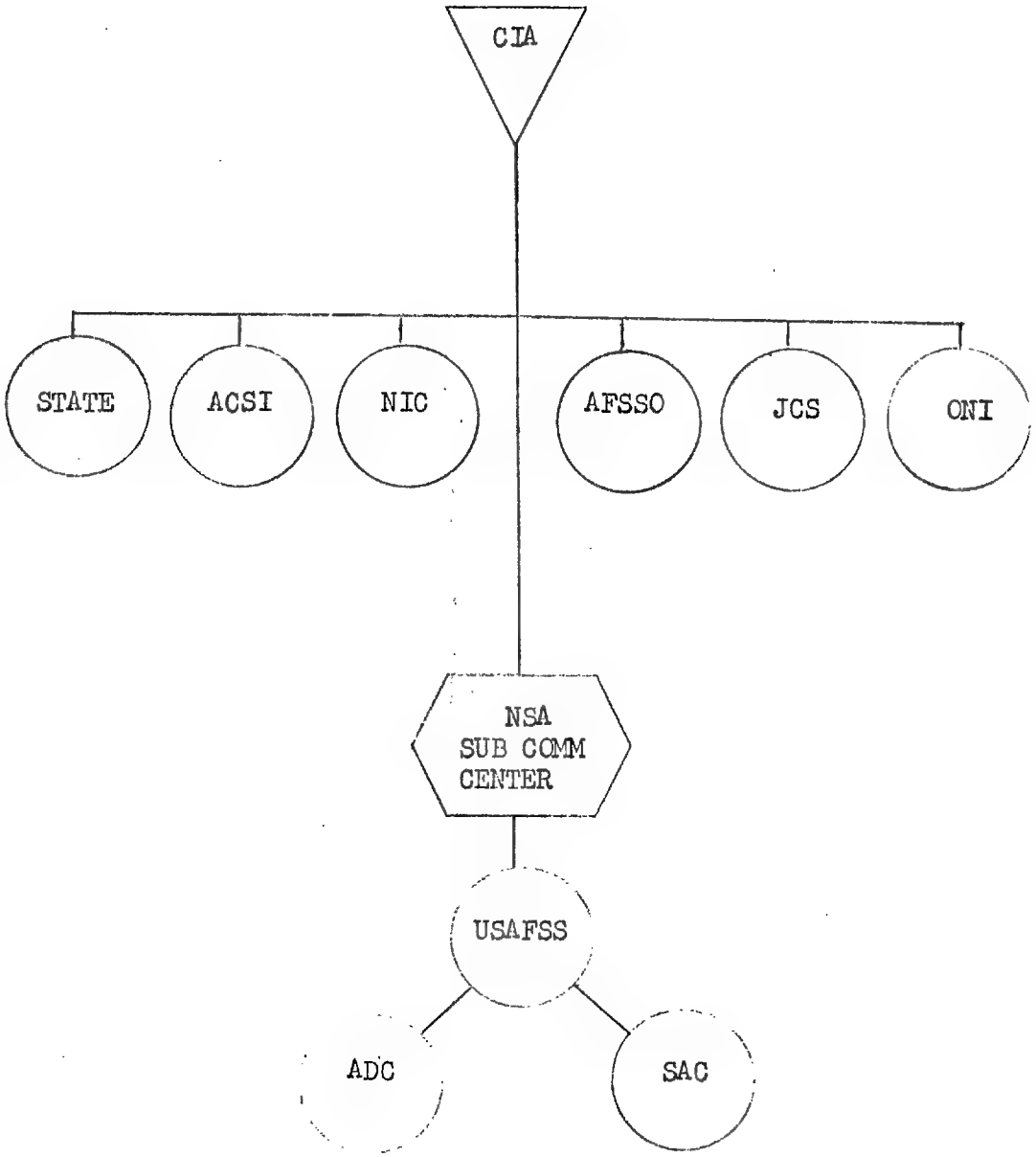
---

* See Figure 23, p. 167

** See Figure 24, p. 168

Figure 23

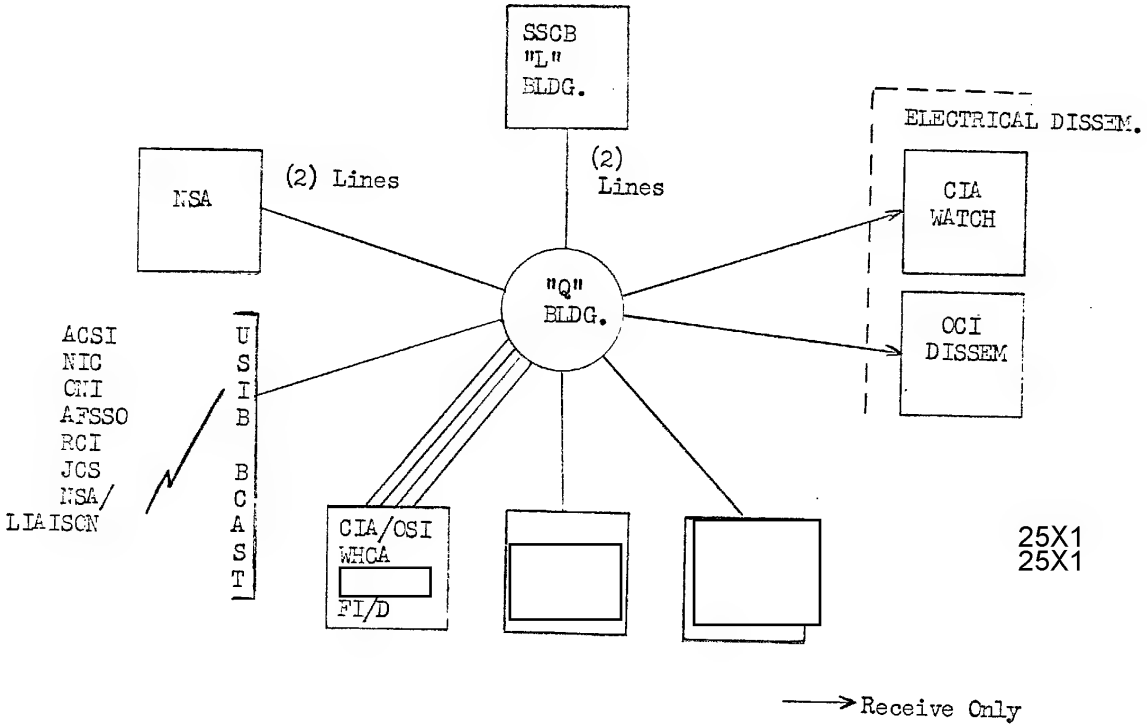
USIB BROADCAST - CIRCA 1959-60



SECRET

"Q" BLDG CIRCUITS 1960-61

Figure 24



25X1

tours through the use of the KL-7 crypto system. It was also the first center designated for receiving CRITIC messages in CIA.

In 1956 a staff study recommended that a consolidated special center be established in the Headquarters Building at Langley to replace the proliferation of special centers that existed. * In 1958 OC, planning for fulfilling OCI's commo requirements in the new building at Langley, proposed that the "Q" Building and "L" Building Special COMINT Signal Center (SSCB) be consolidated into one large Special Signal Center on the first floor of the new building. The consolidated Signal Center would take care of all of OCI's (and the rest of its DD/I offices) COMINT Commo requirements, as well as the DD/P (FI/D) and OC's own COMINT cable requirements. To expedite the flow of traffic between OCI's seventh floor NORTH location and Signal Center's first floor SOUTH area, it was proposed that a 52-pair secure shielded cable link the two. OCI would be provided with all the terminal teletype equipment

* See Attachment OO

on the seventh floor necessary to keep the traffic moving quickly between the two locations. No cryptographic equipment would be installed on the seventh floor, since it was OC's desire to consolidate all such gear in its first floor area. No satellite crypto facilities were to be permitted in the new building. OCI agreed to accept OC's proposal for the new building if OC would agree to staff the seventh floor teletype terminal with competent S/C personnel. OC was reluctant to staff the seventh floor with communicators but finally agreed to do so. The "Q" Building Signal Center was the first to move into the new building in October 1961, and eventually became the consolidated Special Activities Facility upon completion of the "L" Building move in 1962.

OCI's local emergency commo center, until the move of "Q" to Langley, was located in Room 2 of East Building. Room 2 had the capability for pulling in traffic from NSA (via G-2) and from FI/D (via "L" Building) in the event "Q" Building was knocked out. The facility was tested periodically to maintain it in a "ready" state. OCI also

had an emergency facility at [redacted] 25X1

25X1 [redacted]

G. Teleconference Activity

A teletype conference or Telecon was a technique whereby two parties at remote locations were in direct contact through the use of teletypewriter equipment. Telecons date from the early days of World War II. Various types of one-time tape and rotor systems were used to scramble (encipher/decipher) the conference traffic. Telecons were used when urgent exchanges of information were required with groups of personnel at diverse locations. A teleconference tied up one send/receive circuit for the entire duration of the conference since the circuit could not be used for processing normal message traffic simultaneously with the holding of the conference. Since Telecons were very expensive to operate, both from personnel and circuitry standpoint, they were not used extensively.

CIA first used the teleconference technique in the early 1950's when special teletype equipment with projectors and view-through screens

were installed in OC's Conference Room in "I" Building. The Machine Cryptographic Branch could activate, whenever necessary, special off-line teletype conference circuits between various government intelligence agencies, or any part of the Government having provisions for off-line transmission. MCB, utilizing facilities of the Army Command and Administrative Network (ACAN), operated teletypewriter conference facilities. These were utilized only when normal message procedures did not suffice. For several years regularly scheduled teleconferences for OCI and OSI were conducted on Tuesdays and Thursdays between Headquarters and [redacted] A OTT crypto system was used to scramble the conference traffic. The facility in "I" Building flashed the message on the screen as it was being decrypted and simultaneously provided a hard teletype reading copy for the conferees. Information exchanged during the Telecon was known as "Telecon Items." Each IN and OUT Telecon Item was numbered consecutively so that questions and answers could be easily and quickly identified.

25X1

As many as 100-150 items were exchanged during a conference, and they sometimes lasted as long as four hours.

During teleconference activity one Watch Officer and two-three operators were required to man the facility in "I" Building. The operators managed the screening and associated teletype equipment and maintained continuity of service with the support agency supplying the circuit (Military), and the Watch Officer served in a liaison capacity between the conferees at Headquarters and the field, making certain that proper and secure procedures were employed during the passage of traffic.

Since teleconferences were very time-consuming from a personnel standpoint, not to mention tying up a transoceanic circuit for hours, they were for the most part discouraged. Teleconferences with several other locations were held periodically in "I" Building but were unscheduled and strictly on an urgent need basis.

With the advent of the KW-26, the modus operandi involved in teleconference techniques was simplified and not so time-consuming as far as OC

manpower was concerned, but the technique was still restricted by availability of circuitry and proper cryptographic equipment. A teleconference facility was established in the new Signal Center at Langley. However, due to continuing space problems it was not long before it was dismantled. Several M-28 ASR's used for training purposes were set aside for conference use in emergencies.

A teleconference facility was installed in the new CIA Operations Center in 1965 for the use of Task Forces and other high level meetings during crises periods. Probably the greatest use of this technique occurred during the [redacted] 25X1 Crisis when almost continuous Telecon activity was in evidence for several weeks. Thousands of items requiring "real time" critical action were exchanged.

Teleconferences, while not used extensively, nevertheless played an important part in the communications service rendered, affording CIA users extremely rapid exchanges of information between Headquarters and the field.

H. Teletapes, Electrical Dispatches

The Teletape Program was established on a trial basis in 1958 for the purpose of expediting the handling of certain categories of dispatch traffic. Prior to 1958 all dispatches were sent/received [redacted] 25X1

25X1 [redacted] Courier runs between many field stations were infrequent, and it often took two-three weeks for dispatches which required timely action. There was also periodic evidence that there had been

25X1 [redacted] DD/P memo to D/CO

25X1 [redacted] dated 3 February 1958 requested that the D/CO investigate the feasibility of enciphering dispatch traffic. OC-7459 dated 21 February 1958 answered the initial query and stated that OC would consider a test program which would encipher dispatches for pouching via air mail. *

Briefly then, the teletape program was initiated in 1958 as an experiment to provide a type of communications more rapid and more secure

25X1 [redacted] but more economical than

* See Attachments PP and QQ

cables. Secretaries, with the aid of the Friden Flexowriter, prepared punched tapes simultaneously with the typing of dispatches. The punched tape was delivered to the S/C where the dispatch was logged, encrypted on an off-line OTT system, placed in a round reel type container, and returned to the originating Division. They in turn air mailed the container to its destination. At the distant stations the message was delivered to the Signal Center where it was decrypted and the clear text tape delivered to the addressee where it was run off on a Flexowriter for distribution. The system was ultimately designated [redacted] 25X1

The system was set up on a trial basis with [redacted] The program quickly proved successful. The air mailing of tapes between Headquarters and [redacted] for example, cut delivery time to three-four days. However, unfortunately for OC, while it may have been successful for the DD/P, it was an added workload for the Signal Center since dispatches were much more lengthy than ordinary messages and therefore on an off-line one-time tape system the workload

25X1

25X1

was significant. It wasn't long before personnel were assigned to process teletapes on a full-time basis solely for this purpose. The adoption of teletape did not then, and indeed never did, significantly decrease cable traffic as it was originally hoped.

During 1959-62 [redacted] was designated as the Teletape Coordinator for OC. This function was transferred to OC/T in 1963. Because of his primary interest, many of the memoranda concerning teletapes were originated by the Chief, Signal Centers. 25X1

Initially, from 1958-60, the Cable Secretariat at Headquarters ran off and processed [redacted] tapes and delivered these to appropriate offices. In 1960 the C/S discontinued processing [redacted] dispatches, and these were forwarded by the S/C directly to the appropriate Area Division. * 25X1 25X1

With the advent of the KW-26, the [redacted] program was given added impetus. The cumbersome manual encipherment/decipherment by OTT was dis- 25X1

* See Attachments RR and SS

continued, and the teletape was electrically transmitted on KW-26 circuitry on a time available basis, further reducing the three-four day pouching times to Europe to one-two days. Naturally, since this technique, combined with the KW-26, reduced [redacted] 25X1 times drastically, OC got on the bandwagon and an OC teletape system was inaugurated between Headquarters and the Chief [redacted] in late 1959. * 25X1

Plans were made by the DD/P to expand the teletape system on a world-wide basis utilizing the new AXANET KW-26 system. Consequently, by 20 April 1960, six stations were in the network. These were Headquarters, [redacted] 25X1

25X1 [redacted]

Two developments in 1960-62 caused the teletape program to slow down:

1. OC again stated that teletapes were an additional workload and were not processed free, and that cable traffic was continuing to increase with no significant decreases noted as a

* See Attachment TT

result of the adoption of the teletape. *

2. The Friden Flexowriter was found to be very insecure and radiated great distances, the latter almost resulting in discontinuance of the program.

In order to save the program, DD/P installed shielded rooms at many of its overseas locations, and OC experimented and actually installed noise generators at several locations to "drown out" and counteract the radiation characteristics of the Flexowriter.

At one time there was an attempt to have secretarial personnel use the M-19 teletype machine to prepare the tape; however, the training problems involved and the lack of enthusiasm on the part of secretaries to become involved with the operation of a teletype machine scuttled this attempt. The M-19/28 technique was used by OC for its own teletape program.

With the use of screen rooms and noise generators, by 1963, 14 stations were in the tele-

---

* See Attachment UU

tape network. These were the original six plus

[redacted] 25X1

The Systems Group of DD/P, during 1962-65, continued its search for a radiation free Flexowriter or its equivalent. Several projects were implemented and abandoned. The Headquarters Signal Center continued to process increased volumes of teletapes through its terminal facilities with no major procedural changes. At one time, for a short period, teletapes were electrically delivered by the S/C to the DD/P/RID Teletape Center; however, this technique, due to service and accountability problems, did not work out. By the end of 1965, teletapes were couriered between the Headquarters Signal Center and Records Integration Division (RID). Stations using the teletape system in 1965 are depicted in the Teletape System Status Report of 28 May 1965. * Commo teletape systems in 1965 were established between

25X1 [redacted]

In 1966 a program was inaugurated with

---

* See Attachment VV

selected Far East (FE) stations to use normal communications equipments/channels for the processing of dispatches to stations not equipped with the Flexowriter. * This system was designated the Electrical Dispatch. [redacted] 25X1

25X1 [redacted] participated in a test program which proved successful. [redacted] were added to the 25X1 program in October 1966.

The Electrical Dispatch was devised to provide immediate service at certain stations with a need for communications faster than pouch but less timely than cables, but which for reasons of space, security, or maintenance could not accommodate Flexowriters.

At Headquarters the outgoing Electrical Dispatch was typed on a Flexowriter in the Area Division. The punched tape and one copy of the message was forwarded to the S/C. Check numbers and communications routing were added, and the complete tape transmitted via KW-26. With the

---

* See Attachment WW

exception of format and OC assignment of check numbers, the procedure was identical with the teletapes. The recipient Signal Center passed NCR teletype paper copies to the station for distribution.

In the field the outgoing Electrical Dispatch was given to the Signal Center which assigned check numbers, poked the tape on its normal teletype equipment, and transmitted the Electrical Dispatch to Headquarters. On receipt the Headquarters Signal Center forwarded the tape and monitor copies to the RID Center Teletape Unit where the dispatch received the same handling as a teletape.

By the end of 1966 plans were completed for integrating the teletape and electrical dispatch systems into what became known as Telepouch. OC recommended that the Model 28/37 teletype machine be used at electrical dispatch stations and as the ultimate machine to replace all Flexowriters.

25X1

Next 4 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

J. CRITIC Messages

DCID No. 1/8, 29 April 1958 * was the directive for the handling of Critical Intelligence in the Agency. OCI Notice No. 50-200 dated 15 January 1962 ** summarized the history of the CRITIC system of reporting.

Generally speaking, the NSA Criticomm Network was responsible for the processing of CRITIC messages. CIA field stations filed their CRITIC messages to the nearest AXANET Relay Center having a tie-line into the Criticomm Network. The CIA terminal was first located in "Q" Building. The Criticomm Network passed the message to Washington where it was instantaneously transmitted on the ZICON Broadcast to all U. S. Agencies authorized to receive Critical Intelligence Messages. This was accomplished through the use of a unique format which contained [redacted] indicator XCRITIC which triggered a system of automatic computer controlled dissemination sequences. *** 25X1

---

* See Attachment CCC

** See Attachment DDD

*** See Figure 27, pp. 189-190 and Figure 28, pp. 191-192

Next 3 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

After the "Q" Building Signal Center was consolidated into the Special Activities Facility in the new Langley Signal Center, CRITIC messages were received on the [redacted] Broadcast at this location. Upon arrival, the CRITIC message triggered a bell notifying the operators that a CRITIC message was being received on the Broadcast. The CIA Operations Center received the CRITIC message simultaneously with the Signal Center; however, SAF personnel made certain that the CRITIC was received on the electrical dissemination circuit on the seventh floor in good stead. If the CRITIC message was of a Non-COMINT nature, SAF personnel also passed the message as rapidly as possible to the Cable Secretariat for additional dissemination. For several years the message was also relayed to the Department of State; however, State eventually received CRITIC messages directly from NSA. SAF personnel maintained a separate CRITIC log and entered handling times of both live and test CRITIC messages. Periodic tests were conducted by members of the CRITIC community. The goal originally was 10 minutes from origina-

25X1

tion in the field to dissemination in the Washington area for some stations, and one hour for others. However, the one hour rule was eventually discontinued, and by the end of 1966 all stations were in the 10 minute category.

CRITIC messages may be altrouted in AXANET to Washington and filed in the Criticomm Network at Washington for dissemination on the

25X1 [redacted] Broadcast. Stations using OTT and OTP off-line cryptographic systems directly with Headquarters filed their CRITIC messages to the Headquarters Signal Center in the off-line system employed. The S/C refiled the message into the Criticomm Network for dissemination on

25X1 the [redacted] Broadcast. *

The CIA routing document pertaining to the handling of CRITIC messages during this his-

25X1 torical period was [redacted] This document is still being used and is updated periodically.

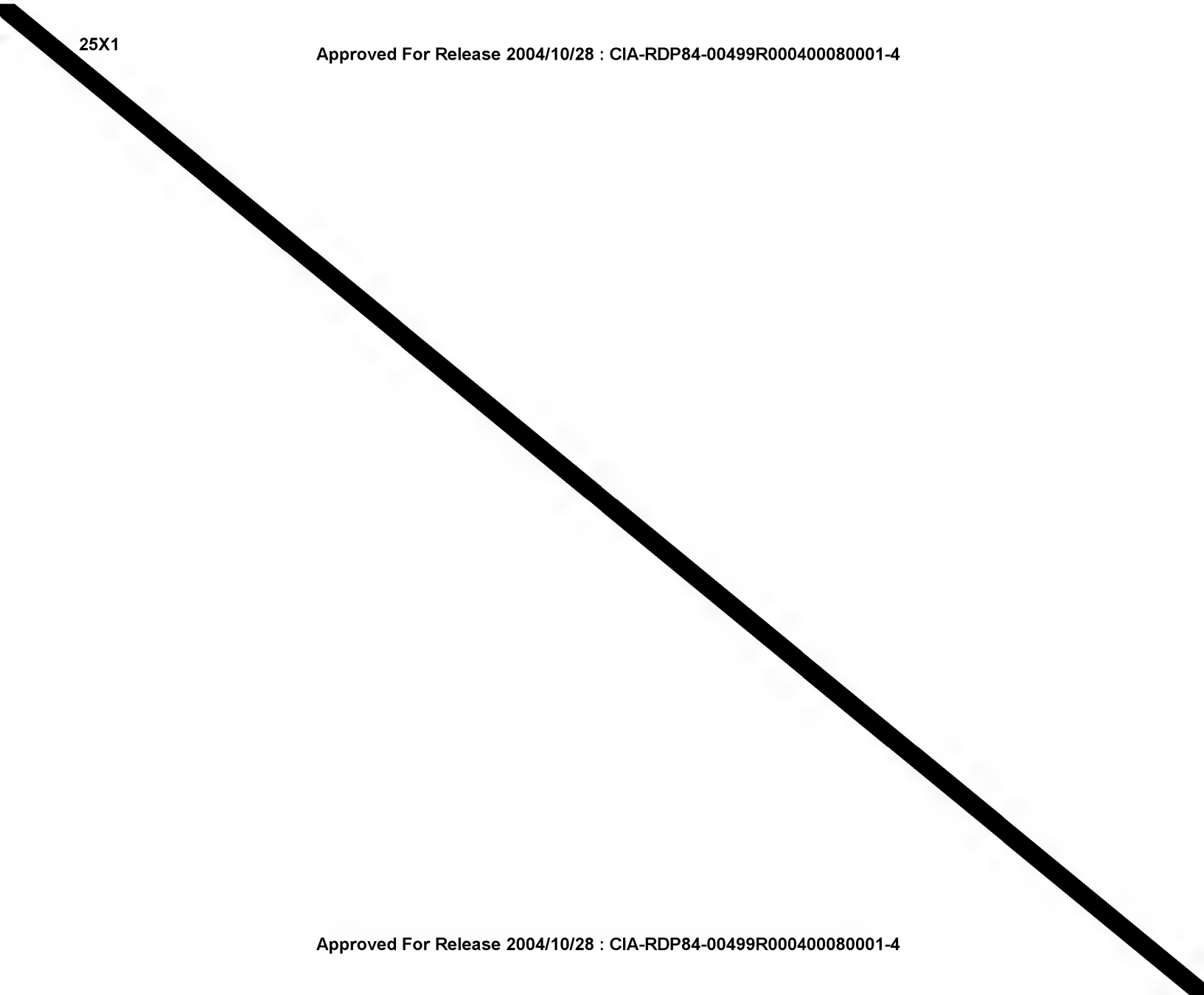
Starting in 1960 a backup CRITIC telephone

25X1 system [redacted]** was developed for use in case

---

* See Figure 29, p. 195

** See Attachment EEE



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

normal communications facilities were disrupted. The CRITIC message was actually telephoned in cipher text to a sterile number in the Headquarters Signal Center directly from the field station, and the Signal Center Officer took the message down in long hand. The technique was periodically tested; however, it was never used extensively. The quality of circuitry and altroute capability within AXANET was such that the [redacted] technique "just seemed to fade away." 25X1

CRITIC messages were always handled in the most expeditious manner possible by all Branches of the S/C involved. When a CRITIC message arrived it was processed to completion IMMEDIATELY, taking precedence over all other messages in the Signal Center.

K. Move to Langley - "Q" and "L" Building Signal Centers

Like other Agency employees, Signal Center personnel anticipated the move to the new Headquarters Building with some ambivalence, additional travelling time needed and possible difficulty in getting to and from work being the main concern,

but everyone looked forward eagerly to being housed in a building designed expressly for CIA operations. Signal Center personnel were especially enthusiastic at the prospect of working in a custom-planned environment offering the ultimate in modern facilities and working with the most sophisticated equipment. This was heightened by the experience of long years spent in makeshift quarters with substandard conditions in the old Administration, South, and temporary "L" Buildings. Unremitting deterioration of these premises increased as, from the moment of ground breaking for the new building, maintenance of the old was reduced to the barest minimum. This was understandable in view of long-overdue demolition plans soon after evacuation.

Construction of the new building proceeded according to schedule until, only a few months before anticipated completion, the Agency was faced with a serious problem. To yield right of way for the approach roadways to the new Roosevelt Bridge, "Q" and "M" Buildings had to be evacuated unceremoniously, as was the case with the Agency's

historical neighbor, the old Christian Heirich Brewery. Confronted by this unexpected contingency, the Agency ordered the general contractor to expedite completion of the section allocated to the departments soon to be displaced from "Q" and "M" Buildings, thus disturbing the uniform progress previously maintained. In addition to the inevitable problems imposed by this unavoidable alteration of construction schedule, the accelerated move presented a legal difficulty in that the Agency would have to occupy, before its acceptance as a government owned building, a property still owned by the contractor, the Jones and Tompkins Company.

Communications plans had to be amended, and a small segment of the new Signal Center area was set aside for servicing "Q" Building customers.

Expeditious procurement of teletypewriter equipments of the M-28 type ahead of schedule was accomplished only as a result of great effort on the part of both the Teletype Corporation and the OC Engineering Division. Since all equipments were used for both normal and special purposes,

they required not only installation but compartmented assembly, appropriate modifications, and testing. This made it essential that the equipments and their respective components be dispatched on site by midsummer of 1961.

All seemed to go well until the first Agency's Government tractor trailer was dispatched to Langley and was held at the gate by the contractors for unusually long clearance time, after which the driver had to negotiate this heavy vehicle along a soft, muddy lane and then back up to a small, critical point near the arch of the northwest cafeteria. This called for extreme skill, since the contractor was finding it difficult to establish sound construction footing in this area, but the driver finally succeeded in maneuvering into position. Since the building was owned by the contractors at that point, the S/C and Engineering Officers concerned were confronted with another difficulty. The cargo being electrical components, the Electrical Workers Union would permit its unloading only by qualified electricians, who had to be pulled off other jobs all over the

building to perform this heavy but intricate task. Frustrating as it was, the situation proved enlightening to those present in revealing the uncompromising strength of the union dictations in private enterprises.

All equipment was crated with specifications as to purpose, function, mode of operation, assigned interface, along with internal/external circuitry information. It was with a sigh of relief that, after the equipment was placed in its prearranged area for assembly and testing, plans were able to progress for the necessary preparatory work toward moving the equipment into its final location.

A contract was near completion with a private commercial firm to install and assemble the equipment. However, it wasn't long before the Agency's top security officer assigned to the building found out through his G-2 chums within the contractor element that unless the prime contractor received the communications contract, there might be a work stoppage by the electricians. This would also add to construction

delays. Although this tactic was considered dictatorial and against CIA's principles, [redacted] 25X1

25X1 [redacted] was subsequently granted the contract. Their resources for the job were practically nil, and their action to support the contract was to hire a "communications engineer" with the job authority to recruit moonlighters and muster talent for the work. Although all details were defined in the simplest and most organized manner, results after evacuation of the contract personnel from the premises were quite shocking.

The work was not completed by the deadline for initiating the "Q" Building move. Improper wiring (100 WPM gears in 60 WPM teletypewriters and vice versa) resulted in chaos in the first attempt to transfer circuitry and operations from "Q" to Langley. Fortunately, contingency planning to maintain the "Q" Building operation, with the means of transferring traffic from "Q" Building to Langley on a piecemeal basis, proved successful and resulted in only minimal delay of service to the customers. A full force of the limited number but highly competent Agency technicians dedicated

themselves in remedying the multitude of faults made by the contractor. Consequently, transfer of all circuits and operations was effected within 24-36 hours, and the move of "Q" was completed without any loss of traffic or service. *

Following the "Q" Building move, primary "L" Building S/C trunk circuitry was phased into Langley, commencing in November 1961 and finally completed in February 1962 with the final transfer of all circuits from "L" Building. During this period, "L" Building eventually became a terminal off the Langley Relay Facility, and upon completion of the move on 10 March 1962, the tape relay was simply diverted from the external "L" Building linkage to the new internal Langley Terminal Facility. This transaction was executed splendidly because of the sense of involvment and fine work of all CIA personnel concerned.

Two Comcenters were in operation between November 1961 and March 1962, which not only proved wasteful of manpower, but called for great dili-

---

* See "Q" Building Move by [redacted] pp. 205-208

25X1

gence and dedication.

Space precludes more than a hint as to the endless snags, delays, and frustrations. Simple communication with the subcontractors relating to their special work often resulted in unforeseen problems, the various unions invariably dictating who could do what, when, and to whom or with whom, with the ever-present threat of legal proceedings. One example: [redacted] threatened legal suit as well as informing their friends in Congress because they did not receive a requested bid on the no-break emergency power system, even though this company had been previously contacted and had declared they could not make delivery within the required time. 25X1

Another problem was the new building "constructional change policy." There was a tremendous cost for a very minor change, e.g., $500.00 was charged just to change a blueprint for relocation of a door on the architectural drawings.

Tape relay equipment was the first of the M-28 variety which the Teletype Corporation

had described as "their handmade first." The

25X1

[redacted] Technical Control Console which was to have been the utopia for quality control, had many engineering deficiencies and disappointments, although it eventually proved to be a satisfactory adjunct to the system. The design and installation of an endless conveyer for transporting messages between the S/C and the Cable Secretariat was so "over engineered" that the method of chaining metal baskets appeared more appropriate for use as a transport for coal or ore from a mine than for moving office papers. The removal order was given shortly after the move to the new building. The telephone company also had their problems as the scope of the installation and requirements involved the largest repeater installation at that time of any building ever constructed.

Despite all trials and tribulations, the job was finally completed, to the credit of tireless personnel who stayed with it uncomplainingly with dogged perseverence. The new Signal Center bore no resemblance to the old "L" Building operation. Planned during a transitory era, the new

streamlined system was quite revolutionary. Notwithstanding, some initial concepts were outdated by moving time. Yet in spite of all the anguish in dealing with new equipments, operating systems, and functional devices, due recognition must be accorded to those who gave so much of themselves to bring it to fruition.

"Q" Building Move to Langley, October 1961

by [redacted] 25X1

The "Q" Building Signal Center moved into an unfinished area reserved for the Signal Center. Since the "Q" Building Signal Center was one of the first units to move to Langley, the move was fraught with difficulties. At the time of the relocation the south end of the building was still under construction, and personnel assigned to the area worked under extremely difficult conditions. Although the Comcenter itself was secure, construction people were working all around it continually. S/C personnel were required to wear two types of badges, the regular CIA badge and the construction company badge. The area under construction was

policed by contractor personnel who had trained dogs accompanying the guards as they patrolled the area. The north end of the building, which was finished, was policed by regular GSA guards. Sanitary facilities were limited, and the only eating facility was a contractor type sandwich bar.

The Temporary "Q" Building Signal Center activated with the following circuits:

25X1

(3) NSA
[redacted]
USIB BROADCAST TO STATE, RCI, CNO, ACSI, NSA, LIAISON, AFSSO, AND THE WHITE HOUSE.

(2) SSCB "L" BUILDING
MAIN SIGNAL CENTER "L" BUILDING
7th FLOOR (RECEIVE ONLY)

All incoming traffic was received in the relocated Signal Center and "tape relayed" to a terminal facility located in the OCI Watch on the completed seventh floor north side of the building. Outgoing traffic (with the exception of White House, USIB items, and other critical material) was delivered by courier from the seventh floor to the Signal Center for transmission. Traffic for overseas agency stations was transmit-

ted to "L" Building for relay. Non-Agency addressed traffic was transmitted directly via the above circuits. The traffic that was received from NSA was also relayed to the "L" Building Signal Center for DD/P-FI/D and Office of Communications, Special Programs (OC/SP).

From October 1961 through February 1962 every imaginable type of outage occurred. There were several power disruptions caused by the new installation, heavy snows, automobile accidents, accidental line cuttings, etc., and these bordered on the ridiculous. Additionally, since the building was still under construction, crypto equipment failure due to heat problems was also experienced.

The seventh floor terminal was literally an ice box. Personnel assigned to man the terminal not only found that they had to wear heavy clothing but also had to install portable electric heaters. It was quite some time before the Air Conditioning Contractor tied this problem with one occurring in a fifth floor office wherein the personnel were smothering. The thermostats were cross wired!!!

Added to all this, traffic volumes tripled

during the first month in the new building and the installation of additional circuitry became necessary. Consequently, a fourth circuit with NSA was installed and several additional circuits with "L" Building were activated. During the period October through February, traffic handling procedures were refined "under a baptism of fire" to say the least and with the completion of the move of the main Signal Center from "L" Building to Langley in March 1962, the temporary OCI Signal Center was amalgamated with what was the Special Signal Center Branch in "L" Building. Procedures were again reviewed and updated and finally in April/May 1962, when the dust settled, the Signal Center was again a smooth-working organization.

It is a credit to the members of the "Q" Building Center at the time, that according to available records and recollection of personnel involved, not one message was irretrievably lost during this chaotic period of activity.

L. Liaison

There was a saying in the Signal Center that when the phone rang in the Watch Officer's

office it could be anyone from the Director of CIA to the "lead mop" of the heavy duty char force. The S/C conducted liaison with all components of the Agency at the directorate and subdirectorate levels — Director's Office Complex, DD/I, DD/P, DD/S, Deputy Director, Science and Technology (DD/S&T) — in the transmission and reception of its communications product. The Signal Center also conducted liaison with communications officers in the Department of State and the entire military establishment (Army, Navy, Air Force, NSA, JCS, etc.) as well as other U. S. Government Agencies in the conduct of its business.

Since the liaison conducted related primarily to the type of traffic processed, the following are samples of the level of liaison for each category of traffic at the end of 1966. Liaison functions between 1951 and 1966 were conducted in a like manner, commensurate with internal organizational changes of the agency.

CIA AND OTHER AGENCY STAFF TRAFFIC —

Director's Offices, DD/P, DD/I, DD/S components, and State and Military communica-

tions officers providing support in the processing of this traffic. Perform duty officer functions for a small percentage of traffic.

CIA AND OTHER AGENCY S.I. TRAFFIC —

Director's Offices, DD/P, DD/I, DD/S, DD/S&T components, and State, Military, NSA, and affiliated communications officers engaged in the processing of this traffic. Perform duty officer functions for approximately 30% of this traffic.

CIA RESTRICTED HANDLING TRAFFIC —

Director's Offices and DD/P personnel involved in the processing of this traffic. Perform duty officer functions for all traffic.

CIA AND OTHER AGENCY VIP TRAFFIC —

Director's Offices, White House, Department of State, Secretary of Defense, and other U.S. Government agencies engaged in the processing of this traffic. Perform duty officer functions for all traffic.

CIA AND OTHER AGENCY PROJECT TRAFFIC —

DD/S&T Project Officers — Office of Special Activities (OSA), Office of Special

Programs (OSP), Office of Research and Development (ORD), Office of ELINT (OEL) — and affiliated Military Communications Officers and National Reconnaissance Organization (NRO) agencies. Included is liaison with Commercial Contractors associated with the various projects. Perform duty officer functions for all traffic.

M. Crises Periods

The Signal Center had to operate through many periods of national political crises during 1951-66. A few examples are:

Iran	1953
Guatemala	1954
Hungary	1956
Suez	1956
Lebanon	1958
Indonesia	1958
U-2 Incident	1960
Bay of Pigs	1961
Berlin Wall	1961
Laos	1961
Powers/Abel Exchange	1962

Cuban Missile Crisis	1962
Dominican Crisis	1965

The Signal Center also operated through several natural crises. One of these was the frequent threat of flooding of the Potomac during the "L" Building residence. *

During all of the national political crises, traffic volumes increased and fluctuated wildly, particularly the number of high precedence messages handled. It is not possible to reconstruct the various Signal Center actions during all of the above mentioned periods due to the destruction of most records; however, a few have been selected as examples of what transpired based on recollections and records available.

As a result of post-mortem analysis after every crisis, improvements were made in areas of S/C operational procedures. Thus, every crisis actually resulted in some improvement and advancement in some facet of S/C operations.

A sample of some of the complex procedures

---

* See Attachment FFF

employed in "getting the message through" is graphically presented by [redacted] of the 25X1

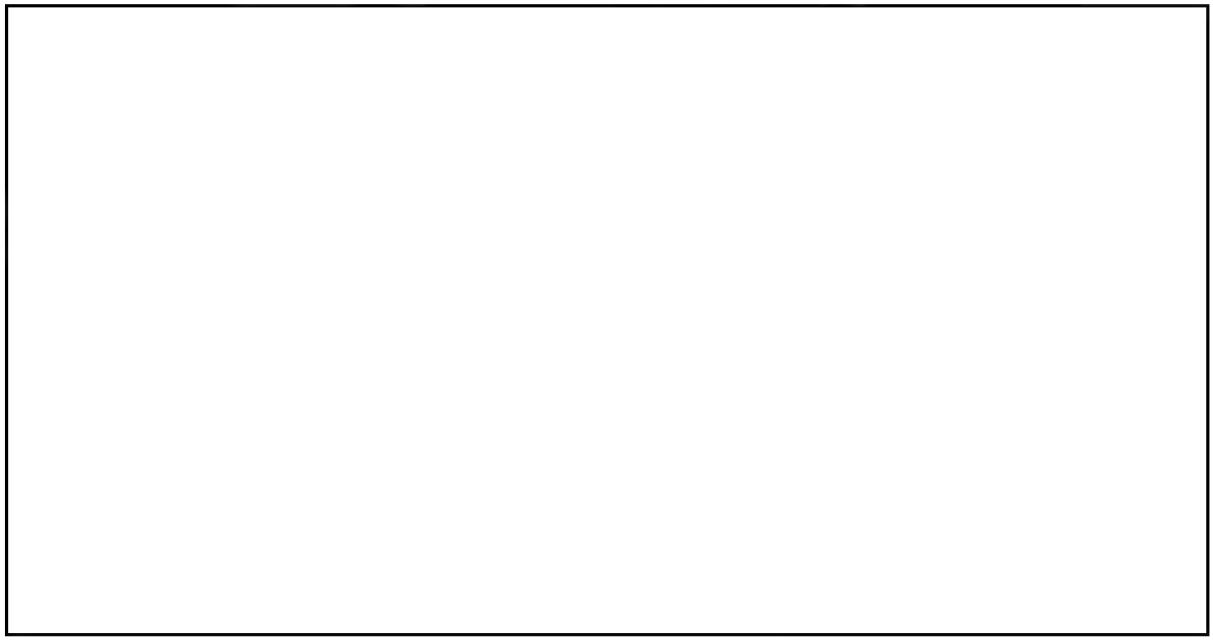
25X1 Signal Center. [redacted] described in detail the cumbersome procedures which were employed in maintaining communications [redacted] 25X1

25X1

[redacted]

Next 9 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4



25X1

The Great Blizzard of 1966

by [redacted]

25X1

The snow started falling on Saturday afternoon, 29 January, and continued through the early hours of Monday morning, 31 January.

Because of extremely hazardous driving conditions, some of the midnight shift personnel, 29 January, started arriving at approximately 2200. Evening shift personnel left as they were relieved by midnight shift personnel. Three of the evening shift personnel, who were scheduled to return at 0700 Sunday morning, 30 January, stayed over and

---

* See Attachment JJJ

slept in the building. All of the midnight shift personnel reported for duty Saturday night although some did not arrive until approximately 2400 hours. This was most fortunate as it turned out.

Sunday morning, 30 January, it was still snowing hard and the wind was starting to blow. It was obvious that no one from the day shift could get to work. One person on duty had chains on his car and he and another person were able to get to the 7-11 store at McLean (it was the only place open) and brought back some bacon and eggs. Upon their return, breakfast was served in the Signal Center lounge. Signal Center personnel on the sixth floor were also served. There were a total of 18 personnel on duty -- 15 from the midnight shift and the three that had stayed over from the previous evening shift.

Around noon Sunday, 30 January, the Signal Center took over four beds in the Medical Section so that personnel could start getting some rest. Sunday evening the Signal Center appropriated two cots and set them up in the Signal Center. This enabled six people to rest at a time. We

continued this arrangement for the duration of the emergency.

Also around noon Sunday, 30 January, building security advised us they had opened the cafeteria kitchen and pillaged some food (ham) from the cafeteria lockers and the building guards were cooking and serving meals. They advised us each time thereafter that food was being served.

The snow continued until the early hours Monday morning, 31 January. Logistics made arrangements to pick up some off-duty personnel at central locations throughout the area and we called these personnel and told them to be at these locations at a certain time. Between 1000 and 1200 on Monday, 31 January, personnel started arriving in the Signal Center to relieve personnel who had been on duty since 2300 Saturday night, 29 January.

OC Newsletter Item from Chief, Signal Center to Director of Communications * also summarized the condition aptly. Sample of remedial

---

* See Attachment KKK

actions as a result of the Great Blizzard is suggested in a memo to Chief, Administration Staff, OC, from Chief, Signal Centers, OC. *

Since 1966, several other crises periods have been experienced. Although these will not be described here, lessons learned from crises of 1951-66 benefitted the Signal Center in weathering these in good form.

N. ASCB/Emergency Communications

As the status of the Agency and its communications network increased, it became obvious, particularly after the Korean Conflict started, that an Alternate or Emergency Signal Center Site in the Washington area was necessary in the event that the "L" and "Q" Building complexes were destroyed as a result of hostile action or natural disaster.

[redacted] 25X1

* See Attachment LLL

Next 27 Page(s) In Document Exempt

Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

APPENDIX-D

Abbreviations

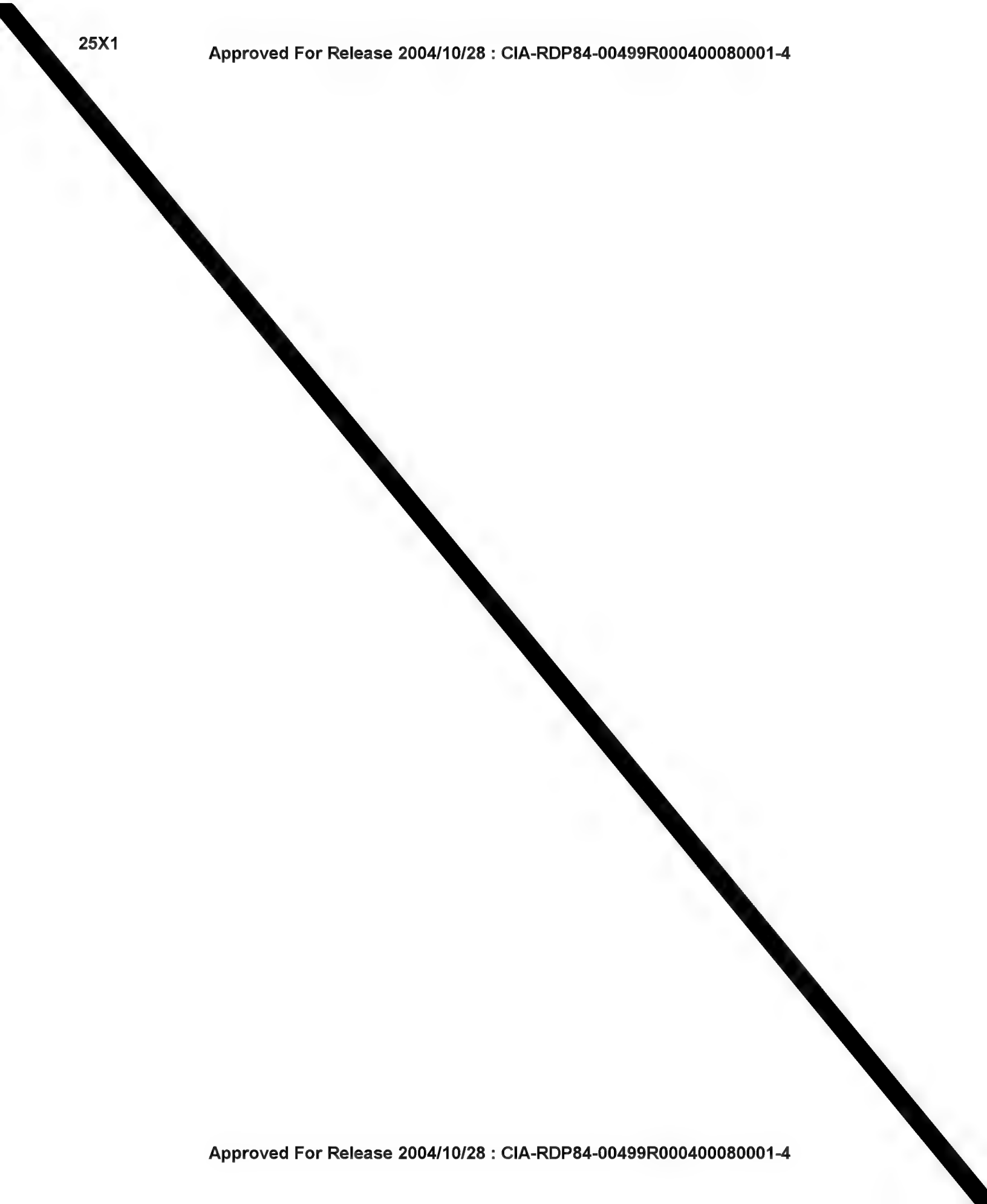
ADCO	Assistant Director for Communications
ADSO	Assistant Director for Special Operations
AFASA	Armed Forces Security Agency
ASA	Army Security Agency
ASCB	Alternate Signal Center Branch
CIA	Central Intelligence Agency
CIG	Central Intelligence Group
CIRVIS	Communications Instructions for Reporting Vital Intelligence Sightings
COMINT	Communications Intelligence
COMSEC	Communications Security
CRITIC	Critical Intelligence
Criticomm	Critical Intelligence Communications System
CS	Communications Specialist
C/S	Cable Secretariat
CS/DO	Clandestine Services Duty Officer
CT/C	Communications Technician/Cryptographer
CWO	Communications Watch Officer
DCO	Director of Communications
DD/I	Deputy Director, Intelligence
DD/P	Deputy Director, Plans

DD/S	Deputy Director, Security
DD/S&T	Deputy Director, Science and Technology
DEVPLAN	Development Plan
25X1 [redacted]	
DT	Double Transposition
ELINT	Electronic Intelligence
25X1 [redacted]	
FE	Far East
FI/D	Foreign Intelligence, Division D
ICS	Interagency Communications System
M&T	Manning and Training
MCB	Manual Cryptographic Branch
25X1 [redacted]	
NRO	National Reconnaissance Organization
NSA	National Security Agency
OC	Office of Communications
OC/E	Office of Communications, Engineering
OCI	Office of Current Intelligence
OC/O	Operations Division, Office of Communications
OC/RD	Office of Communications, Research and Development

OC/S	Office of Communications, Security
OC/SP	Office of Communications, Special Programs
OC/T	Office of Communications, Telecommunications
OEL	Office of ELINT
OO/CD	Office of Operations, Contacts Division
OPSCEN	Operations Center
ORD	Office of Research and Development
ORE	Office of Reports and Estimates
OS	Office of Security
OSA	Office of Special Activities
OSO	Office of Special Operations
OSP	Office of Special Programs
OSS	Office of Strategic Services
OTP	One-time Pad
OTR	Office of Training
OTT	One-time Tape
PD	Preliminary Dissemination
QFM	Quantized Frequency Modulation
RID	Records Integration Division
SAF	Special Activities Facility
S/C	Signal Center
SCO	Signal Center Officer

SDO	Senior Duty Officer
SI	Special Intelligence
SSCB	Special Signal Center Branch
SSU	Strategic Services Unit
TD	Teletype Dissemination
Telecon	Teletype Conference
TFCL	Traffic Control Section
TTYB	Machine Cryptographic Branch
TWX	Bell System
USIB	United States Intelligence Board

25X1



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

APPENDIX-E

Glossary of Terms

Baudot code

The Morse code of the teletypewriter.

Book message

A message sent to several addressees, none of which is required to know which other addressees received the message.

Cable

A message sent across the sea by telegraphic cable. Within communications, the words "message" and "cable" are considered synonymous and are used interchangeably.

Channel

An electrical path over which transmissions can be made from one station to another.

Cipher

A method of communicating in which the letters of the original plain text are rearranged (transposition) or replaced by letters, numbers, or symbols (substitution) according to a given system in order to conceal its meaning.

Circuit

An electronic path between two or more points capable of providing a number of channels.

Code

a. A system of communicating in which arbitrary meanings are assigned to letters, numbers, words, or other symbols, designed primarily to restrict comprehension of a message.

b. In Morse code, the ordinary dot and dash symbols of international telegraphic communications. No concealment is involved.

Communications Center

The office or activity charged with the responsibility for receipt, transmission, and processing of messages.

Cover

The protective guise used by persons, organizations, or installations to prevent their identification with clandestine intelligence activities.

Cryptanalysis

The methods of breaking codes and ciphers.

Crypto

Technical cables containing cryptographic information.

Cryptography

The art or practice of preparing or reading messages in secret writing.

Decipher

To convert a cryptic writing into comprehensible terms.

Encipher

To convert a plain text message into cipher.

Encryption

An enciphering or encoding.

Field Station

An intelligence or operations installation outside of Headquarters.

Government Facilities

Telegraph channels, either U. S. Government-owned or leased, operated by an agency of the U. S. Government for the transmission of official U. S. Government telegrams.

Headquarters

Home office of Central Intelligence Agency.

Indicator

In Communications:

a. An external indicator which identifies the system in which the message is enciphered.

b. An internal indicator which prescribes the internal routing of a message.

Minimize

A code word used for imposing a restriction on non-urgent telegraphic traffic to a post or area and signifying that normal conditions do not exist and message traffic must be curtailed and controlled.

"MONSTER"

A machine for processing one-time pad ciphers.

Multiple addressee message

A message sent to more than one addressee for action or information where each addressee must know that the others are addressees.

Network

An organization of stations capable of intercommunication but not necessarily on the same channel.

Nulls

Symbols included in a cipher that mean nothing and are intended to confuse interceptors.

Off-line

A method of operation in which the processes of encryption and transmission (or reception and decryption) are performed in separate steps rather than automatically and simultaneously.

On-line

An automatic method of encryption associated with a particular transmission system, whereby signals are encrypted and passed direct to a channel/ circuit to automatically operate compatible equipment at one or more distant stations.

One-time system

A method of encipherment which consists of a random key used only once.

Paraphrasing

The changing of the phraseology of a message without changing its meaning. Paraphrasing is accomplished by reqriting the message; changing the position of words and phrases within a sentence; using synonyms or equivalent expressions; and changing the order of paragraphs, but retaining the original paragraph numbers.

Project

An approved clandestine operation.

Radio circuit

A single radio communications link, including radio operations, signal plan, crystals, cryptographic material, secure operating sites, and radio transmitting and receiving equipment at both ends of the link; e.g., base station and clandestine field set.

Radnote

A cable concerning the technical operation of the communications system.

Rotor machine

A progressive-key system of wired codewheels which produces scrambled plain text characters.

SIGTOT

A one-time tape machine for on-line/off-line cipher operation.

Strip system

A slide form cipher device.

Superencryption

An enciphering of what already is a cryptogram; e.g., enciphering a one-time pad message in an on-line machine system.

Tape relay

The procedure employed for the handling of messages by manual, semiautomatic, or fully automatic relay systems.

Telecommunication

Any transmission, emission, or reception of signals, signs, writing, images, and sounds, or intelligence of any nature by wire, radio, visual, or other electromagnetic systems.

Telecon

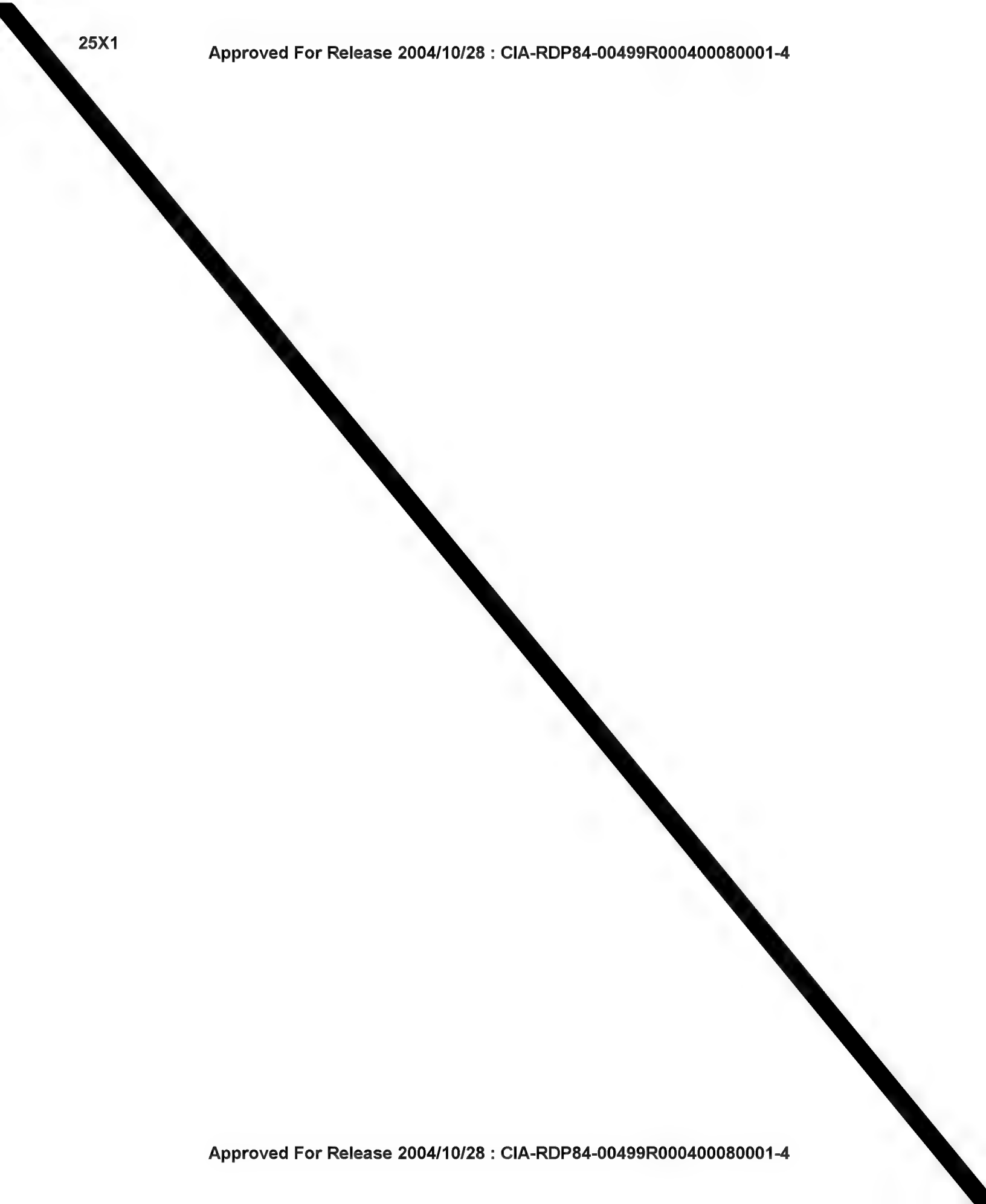
A teleconference or teletype conference between stations. Senior officials at one station confer with senior officials at distant stations via manually patched teletype facilities.

Telex, TWX (Teleprinter Exchange Service)

A commercial subscriber teleprinter exchange service on a time call basis which permits teletypewriter communication on the same basis as telephone service (subscribers operating through central switchboards) to stations within the same country or in other countries.

"TINYTOT"

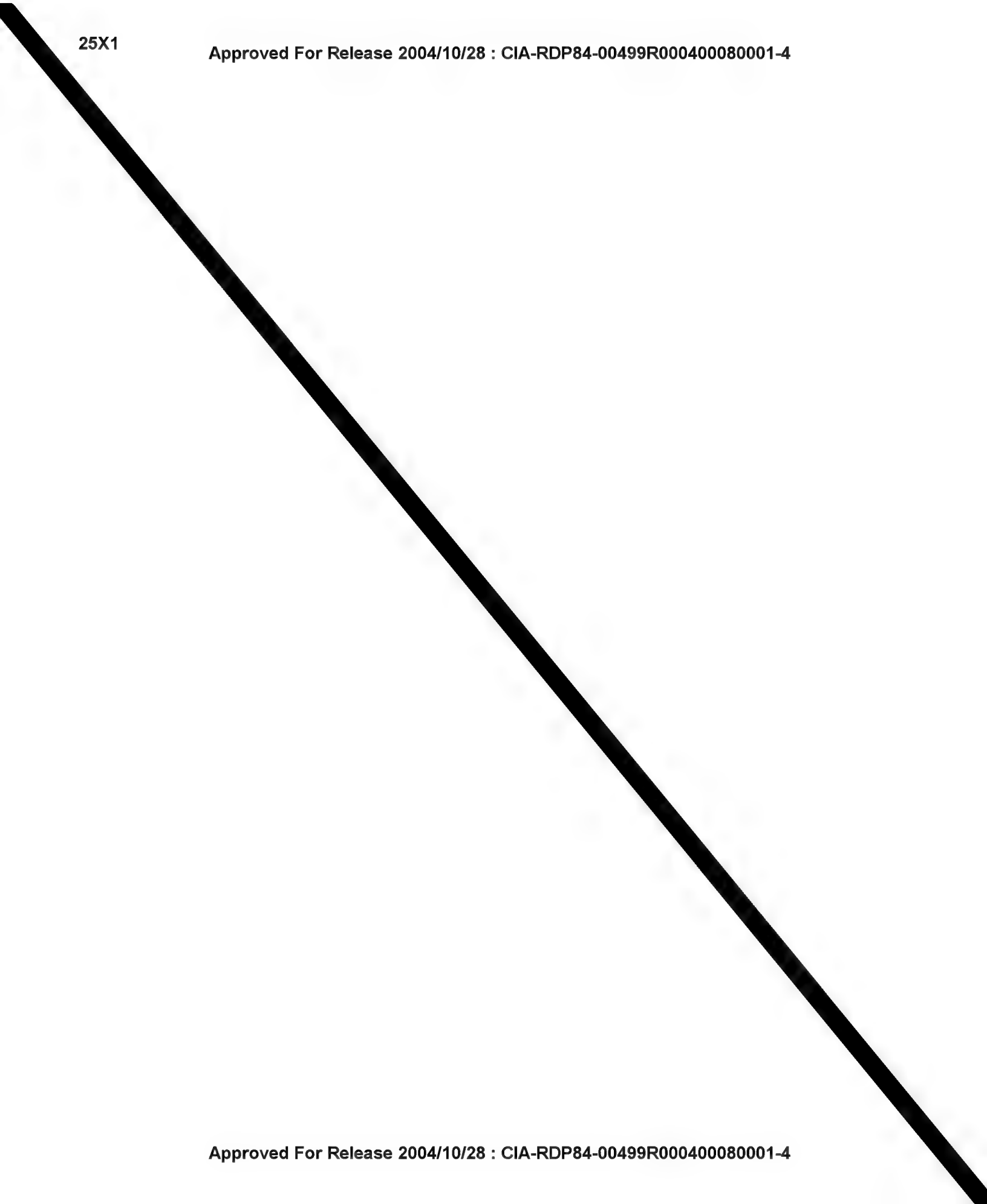
The transientless teletype cipher machine designed to prevent compromise by electrical means.



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

APPENDIX F

Illustrations



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

APPENDIX-G

Attachments

A. Memorandum for ADSO from DCI, 27 June 1951.

B. Memorandum for DCI from ADCO, Subject: Establishment of a CIA Message Center, 9 July 1952.

C. Office of Communications Signal Center, Organization and General Operating Procedures, 1956.

D. Memo to All Signal Center Personnel from Chief, Signal Centers, Subject: Signal Center Reorganization, 27 January 1960.

E. Office of Communications Memorandum No. 33-59, Subject: Trail Establishment of Signal Center Operations Staff, 12 November 1959.

F. Memorandum for Chief, Signal Centers, OC, Task Force Report, 29 January 1963.

G. Memorandum to All Staffs and Divisions, OC from Chief, Signal Centers, OC, SIG-M 63-002, Subject: Reorganization of Signal Center, 3 January 1963.

H. Memo for Chief, Records Management Staff, OC from Chief, Signal Centers, OC, Subject: Domestic Activities, 20 April 1965.

I. Memorandum for Deputy Director (Plans), Deputy Director (Intelligence), Deputy Director (Research), Subject: After-Hours Contacts - Office of Communications, 25 April 1962.

J. Memorandum for DD/S from Deputy Director of Communications, Subject: Intelligence Support in Crisis Situations, 15 June 1965.

K. Office of Communications Order No. 1-56, Subject: Continuation of Essential Activities During Other Than Normal Working Hours, 6 January 1956.

L. Office of Communications Order No. 40-65, Subject: Office of Communications, After-Hours Coverage, 24 November 1965.

M. Memorandum to Mr. Lyman B. Kirkpatrick from Chief, Communications Division, Subject: Communications Personnel, 27 June 1951, - attached Memorandum to ADSO from Chief, Communications Division, Subject: Communications Personnel, 20 June 1951, and Memorandum for [redacted] Subject: Personnel, 23 June 1951. 25X1

N. Memorandum to Director/OC from Chief, Signal Center, Subject: Critical Conditions Existing in Signal Center, 12 July 1951.

O. Office of Communications Order No. 1-54, Subject: Personnel Ceiling of the Office of Communications, 21 January 1954.

P. Memorandum to Chief, OC-DO/SCB from Chief, OC-DO/SCB/P&AS, Subject: The Communications Revolution and the CT/C, 24 March 1969.

Q. Memo for Chief, Administration Staff, OC, from Chief, Signal Centers, OC, Subject: Recruitment of Contingency Force, 21 November 1962.

R. Memo for Director of Communications from Chief, Signal Centers, OC, Subject: Personnel Ceiling, 28 March 1963.

S. Background Paper No. 8, Office of Communications Presentation to the Agency Planning Group for Mechanically Integrated Reporting and Communications System, presented by [redacted] January 1959. 25X1 25X1

T. Memo for Chief, Communications Security Staff, OC, from Chief, Signal Centers, OC, Subject: HL-6 Operational Report, 29 November 1962.

U. Memo for Chief, OC-MD from Chief, Signal Centers, OC, SIG-M 63-018, Subject: Amount of Traffic One Operator Can Poke, 14 February 1963.

V. Memo for Chief, Telecommunications Staff, OC, from Chief, Signal Centers, OC, SIG-M 63-095, Subject: Farrington Scanner, 16 August 1963.

W. Memorandum for Deputy Director for Support from Director of Communications, OC-3954, Subject: Proposed Item for the Support Bulletin, 29 June 1965.

X. Description of LDX, 1 March 1966.

25X1

Y. Communications [redacted] from Deputy Director for Support, Subject: Cable Releasing, 21 December 1966.

Z. Memo to DD/P from Acting Director of Communications, Subject: Reduction of Cable Traffic, 15 August 1951.

AA. Memorandum for DCI from Assistant Director for Communications, OC-3962, Subject: Reduction of Cable Traffic, January 1954.

BB. Memorandum for DCI from Assistant Director for Communications, OC-3963, Subject: Reduction of Cable Traffic, February 1954.

CC. Cable Writing Refresher Course (Outline of Proposed Agenda), April 1956.

DD. Memo to Chief, Telecommunications Staff, OC, from Chief, Signal Centers, OC, SIG-M 65-111, Subject: Procedural Instructions, 7 May 1965.

EE. Memo to Chief, Telecommunications Staff, OC, from Chief, Signal Centers, OC, SC-M 66-339, Subject: Communications Improvement Notice, 7 December 1966.

FF. Signal Center Directive No. 44-66, Subject: Check for Missing Check Numbers, 18 July 1966.

GG. Memo to Chief, Telecommunications Staff, OC, from Chief, Signal Centers, OC, SIG-M 65-006, Subject: Elimination of Check Numbers on AXANET Service Messages, 7 January 1965.

HH. Incoming and Outgoing Message Formats, 1966.

II. Dispatch to Chiefs of Stations and Bases from Deputy Chief, KUBARK, Book Dispatch 5524, Subject: Use of KUBARK Communications Channels, 13 June 1966.

JJ. Dispatch from Chief, KUCLUB, OC-66-120, Subject: Telecommunications/Procedures for Handling Certain Non-KUBARK Messages Via KUBARK Communications Facilities, 27 June 1966.

KK. Memorandum to Chief, Telecommunications Staff, OC, and Chief, Engineering Staff, OC, from Chief, Signal Centers, OC, SIG-M 65-091, Subject: Proposal for the Paging of Messages, 25 April 1965.

LL. Memorandum from Chief, Management Staff for Deputy Director (Support), Subject: Signal Center/Cable Secretariat Operations, 7 February 1958.

MM. Memorandum for Deputy Director for Support from Director of Communications, Subject: Proposed Item for Support Bulletin, 26 May 1966.

NN. Memorandum for Assistant Director for Current Intelligence, Director of Communications through Deputy Director (Intelligence) from Deputy Director (Support), Subject: Staffing for Special Intelligence Communications Center Presently Located in the Office of Current Intelligence, 7 July 1958.

OO. Staff Study - Communications Facilities Required for the Handling of Special Traffic, January 1956.

PP. Memorandum for DCO from Chief of Operations, DD/P, DD/P 3-7398, Subject: A New Suggested Method of Rapid Communications Between Headquarters and Field, 3 February 1958.

QQ. Memorandum for Chief of Operations, DD/P from DCO, OC-7459, Subject: Enciphering Pouches between Headquarters and Field, 21 February 1958.

RR. Memorandum for C/S, EE, WE, FE, FI from [redacted] Subject: Area Division Processing of [redacted] Teletapes and Reports, 29 January 1960. 25X1 25X1

SS. Memo from Signal Center Staff to SCO, SC-0-0-103, Subject: Change in Signal Center Procedures for Handling [redacted] (Reports) Teletapes, 3 February 1960. 25X1

TT. Memorandum to Chief, Signal Centers from Chief, Communications Security Staff/OC, CSD 9-751, Subject: Office of Communications Teletape Program, 28 December 1959.

UU. Memo to Deputy Director of Communications from Teletape Coordinating Officer, Subject: Personnel and Circuit Requirements for Teletape Processing, 9 January 1962.

VV. Memorandum for the Record from DDP/SG, SG-65-360, Subject: Teletape System Status Report, 28 May 1965.

WW. Memorandum for Chief, Far Eastern Division from DCO, OC-4543, Subject: Transmittal of Dispatches, 20 April 1966.

25X1 [redacted]

25X1

[redacted]

CCC. Director of Central Intelligence Directive No. 1/8, Subject: Handling of Critical Intelligence (Effective 29 April 1958).

DDD. OCI Notice No. 50-200, Subject: The Critic System, 15 January 1962.

EEE. Emergency Transmission of Critic Messages via Long Distance, Short Title: [redacted] July 1964. 25X1

FFF. Memorandum for the Record by [redacted] Subject: Flood Alert, 30 March 1961. 25X1 25X1

GGG. Memorandum for Deputy Director (Plans) from DCO, SIG-M 62-116, Subject: Effectiveness of Plan MINIMIZE, 15 November 1962.

HHH. Memo to DCO from Chief, Signal Centers, OC, SIG-M 62-115, Subject: Post Mortem on Lessons Learned, 15 November 1962.

III. Memo to DCO from Chief, Signal Centers, OC, SIG-M 65-131, Subject: "Lessons Learned" from the Crisis in the Dominican Republic, 20 May 1965.

JJJ. Dispatch to Chiefs of Certain Stations and Bases from Chief, KUCLUB, OC 65-199, Subject: SPEEDCAST, 16 July 1965.

KKK. Memo to DCO from Chief, Signal Centers, OC, SIG-M 66-032, Newsletter Item, 3 February 1966.

LLL. Memo to Chief, Administration Staff, OC, from Chief, Signal Centers, OC, SIG-M 66-063, Subject: Emergency Supplies, 24 February 1966.

[redacted] 25X1

PPP. Memo to Chief, Telecommunications Staff, OC from Chief, Signal Centers, OC, SIG-M 64-070, Subject: Emergency Communication - [redacted] 17 April 1964. 25X1

25X1 [redacted]
25X1

RRR. Memo to Intelligence Information Staff, OCI from Chief, Telecommunications Staff, OC, T-M64-605, Subject: Move of CIA Alternate Signal Center (ASC) Communications Facilities, 14 September 1964.

[redacted] 25X1

UUU. Memo to Chief, Communications Security Staff, OC from Chief, Signal Centers, OC, SIG-M 65-102, Subject: Review of Motor Pool Radio Voice Networks [redacted] Nets), 30 April 1965. 25X1

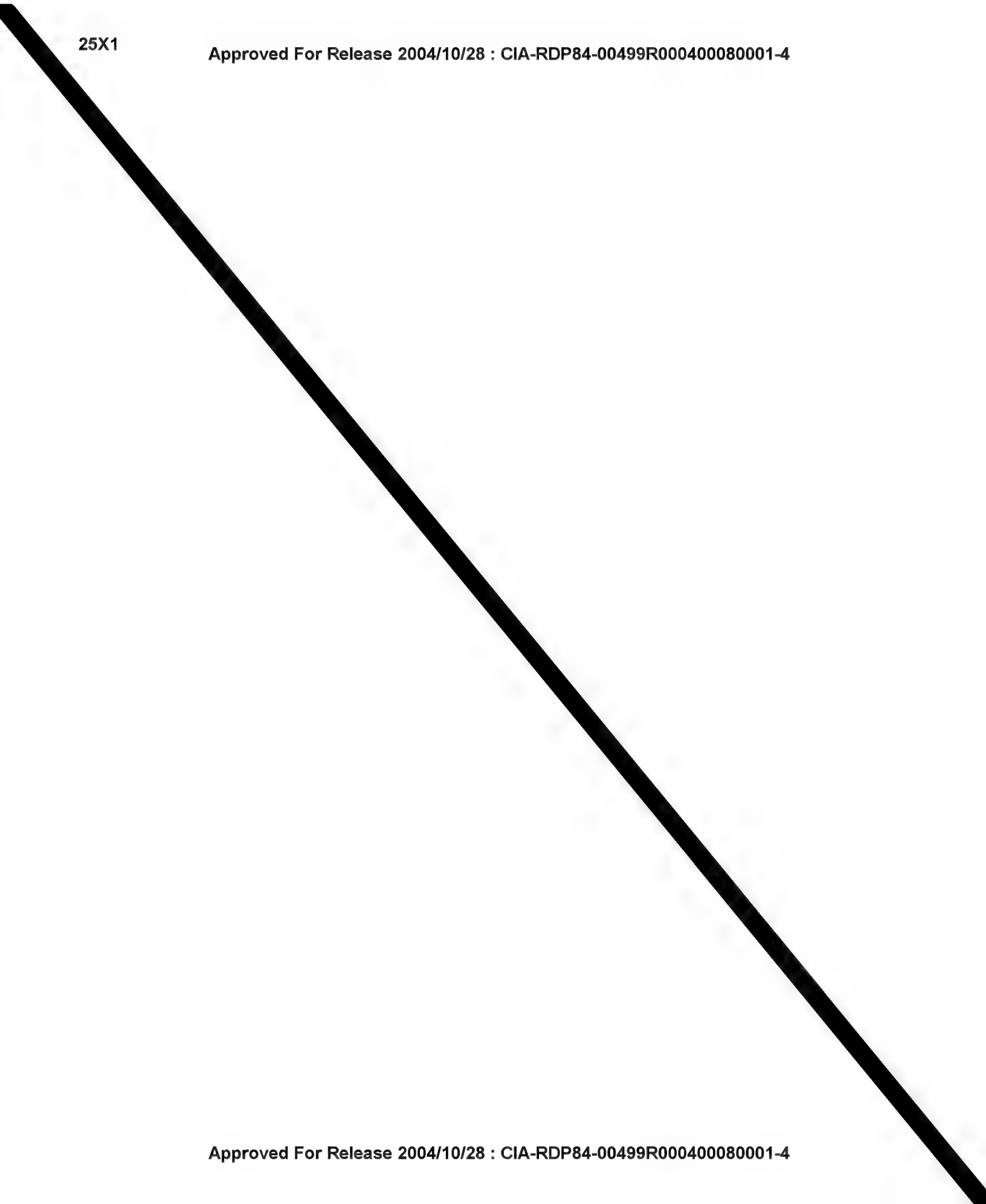
VVV. DCI/SO Mobile Voice Communications Network [redacted] Situation Summary, 30 April 1965. 25X1

[redacted] 25X1

XXX. Memo to Chief, Operations Support Staff, OC from Chief, Signal Centers, OC, SIG-M 65-220, Subject: Manning of the [redacted] Signal Center during an Emergency Situation, 10 August 1965. 25X1 25X1

YYY. Memo to DCO from Chief, Signal Centers, OC, SIG-M 66-096, Subject: Emergency Planning, 1 April 1966.

ZZZ. Memo to Chairman of the Ceiling Board from Chief, Signal Centers, OC, SC-M-66-197, Subject: Request for Slot for [redacted] 28 June 1966. 25X1



Approved For Release 2004/10/28 : CIA-RDP84-00499R000400080001-4

APPENDIX-II

Source References

1. Memorandum for ADSO from DCI, 27 June 1951. File: Job 66-654, Box 1, Folder 6, Archives. Attachment A.

2. Office of Communications, 1 May 1959. Copy 13 on file in Signal Center.

3. Memorandum from ADCO for DCI, Subject: Establishment of a CIA Message Center, 9 July 1952. Attachment B.

4. Office of Communications Signal Center, Organization and General Operating Procedures, 1956. Attachment C.

5. Recollection of [redacted] Interview, 1 December 1970. 25X1

6. Recollection of [redacted]. Interview, 18 December 1970. 25X1

7. Recollection of [redacted] Interview, 3 March 1971. 25X1

8. Office of Communications Memorandum No. 33-59, Subject: Trial Establishment of Signal Center Operations Staff, 12 November 1959. File: Job 66-793, Box 1, Folder 12, Archives. Attachment E.

25X1 9. Interview, [redacted] 4 February 1971.

10. Memorandum for Deputy Director (Plans), Deputy Director (Intelligence), Deputy Director (Research), Subject: After-Hours Contacts - Office of Communications, 25 April 1962. File: Job 66-654, Box 1, Folder 4, Archives. Attachment I.

11. Memorandum for DD/S from Deputy Director of Communications, Subject: Intelligence Support in Crisis Situations, 15 June 1965. Attachment J.

12. Office of Communications Order No. 1-56, Subject: Continuation of Essential Activities During Other Than Normal Working Hours, 6 January 1956. File: Job 66-793, Box 2, Folder 2, Archives. Attachment K.

13. Office of Communications Order No. 40-65, Subject: Office of Communications, After-Hours Coverage, 24 November 1965. File: Job 66-793, Box 1, Folder 2, Archives. Attachment L.

14. Recollection of [redacted] Interview, 9 March 1971. 25X1

15. Memorandum to Mr. Lyman B. Kirkpatrick from Chief, Communications Division, Subject: Communications Personnel, 27 June 1951, - attached Memorandum to ADSO from Chief, Communications Division, Subject: Communications Personnel, 20 June 1951, and Memorandum for [redacted] Subject: Personnel, 23 June 1951. 25X1

Above documents filed: Job 66-654, Box 1, Folder 6, Archives. Attachment M.

16. Memorandum to Director/OC from Chief, Signal Center, Subject: Critical Conditions Existing in Signal Center, 12 July 1951. File: Job 66-654, Box 1, Folder 6, Archives. Attachment N.

17. Recollections of [redacted] Interview, 2 December 1970. 25X1

18. Office of Communications Order No. 1-54, Subject: Personnel Ceiling of the Office of Communications, 21 January 1954. File: Job 66-793, Box 2, Folder 4, Archives. Attachment O.

19. Memorandum for Chief, OC-DO/SCB from Chief, OC-DO/SCB/P&AS, Subject: The Communications Revolution and the CT/C, 24 March 1969. Attachment P.

20. Memo for Chief, Administration Staff, OC from Chief, Signal Centers, OC, Subject: Recruitment of Contingency Force, 21 November 1962. Attachment Q.

25X1

21. Interview, [redacted], 3 March 1971.

22. Memo for Director of Communications from Chief, Signal Centers, OC, Subject: Personnel Ceiling, 28 March 1963. Attachment R.

23. Memo to DD/P from Acting Director of Communications, Subject: Reduction of Cable Traffic, 15 August 1951. File: Job 66-654, Box 1, Folder 6, Archives. Attachment Z.

SECRET (When Filled In)

AREA OR COUNTRY(S)	ORGANIZATIONS	SUBJECTS & TOPICS	PERSONALITIES	DOCUMENT
Hqs. & Worldwide	Off. of Commo. Signal Center	Cryptography, Security Logistics, SIGINT, COMINT		DATE: Sept. 67
25X1	Cable Sec	Spec. Intell, CRITIC Telepouch	& a host of Commo personnel	CLASS.: SECRET
		Communications		NO.:

25X1

IDENTIFICATION OF DOCUMENT (author, form, addressee, title & length)

DRAFT, Chap. III, Section F. of The Headquarters Signal Center -- The Expansion Period 1951-66. (274 pages)

LOCATION: HS/HC-887

ABSTRACT A comprehensive account of the trials and tribulations of Hqs. Signal Center in their ever-changing activity over a 15 year period, including many crises, i.e.; Iran, Guatemala, Hungary, Suez, Lebanon, Indochina, U-2, Bay of Pigs, Berlin Wall, Laos, Powers/Abel, Cuban Missile, Dominican and the '66 Blizzard. Cable traffic was never affected during any of this activity. It also describes the many problems encountered in the move to Langley (Hqs.) from "L" and "Q" Bldg. in Mid-61. There are many detailed charts and graphs which expand the text.

HS/HC- 887

CASE FILE (DESCRIPTION)

INSTRUCTIONS

Place card upright in place of charged out folder.
place card horizontally in returned file folder.

CHARGE TO	DATE	CHARGE TO	DATE

CASE FILE CHARGE-OUT CARD

FORM NO. 119 REPLACES FORM 36-152
1 AUG 54 WHICH MAY BE USED.

(7)